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ABSTRACT

Taking a cautious view of research into the workings of the brain, this booklet suggests that such research has merely given validity to a truth good teachers have always known: all people have two ways of thinking, a linear, logical way, and a spatial, intuitive way. It also suggests that faced with cries for "basics" in education, it should be remembered that nothing is more basic than thinking and that in a balanced curriculum, both kinds of thinking deserve a place. Noting that instruction in linear, logical thinking has long dominated the way writing is taught, the booklet provides a number of activities that involve students in the other kind of thinking as they compose. It argues that such activities can enrich instruction and help teachers reach students who do not respond with enthusiasm to the grammar lesson, the outline, or the five-paragraph theme. Appendixes contain models for constructing frameworks for the writing curriculum and student writing samples. (FL)

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Balancing the Hemispheres: Brain Research and the Teaching of Writing

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Preface

It is relatively rare in the history of educational thought that input from medical research has had a major impact on the way teachers understand their tasks. Within the past decade, however, research on patients with severly damaged or surgically split brains has seemed to many to be rich in its implications for instruction. Some writers, indeed, have gone overboard, using our still inchoate knowledge of the way the brain works to demand sweeping reforms of the curriculum, reforms that seem unjustified by what little is known with certainty.

Gabriele Rico and Mary Frances Claggett make no such demands. Taking a cautious view of the research, they suggest that it has given new validity to a truth good teachers have always known. That is, that we all have two ways of thinking: a linear, logical way, and another way which might be called spatial or holistic, perhaps even intuitive. They further suggest that among the cries for "basics" in education, we should remember that nothing is more basic than thinking, and that in a balanced curriculum, both kinds of thinking deserve a place. Noting that instruction in linear, logical thinking has long dominated the way we teach writing, the authors suggest a number of activities which involve students in the other kind of thinking as they compose. Such activities can enrich our instruction and can help us reach some students who do not respond with enthusiasm to the grammar lesson, the outline, or the five-paragraph theme.

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I

Introduction

Clustering. It's easy, like composing a simple song. The first time it may be hard. Don't try too hard! Just let ideas pop into your head. Soon they'll be coming faster than you can write them down. Quick! Catch that note before you forget. Okay. Write it down. There goes another note. Catch that one, too. Okay—got all the notes you think you need? Now put them together: sharps here, flats there. Fast ones over there after the slow ones. How does it sound so far? Too choppy? Well, rearrange the notes. Maybe a soft section should go there. Right there...see? Yea. There. Now, how's that? Better, huh? Well, keep doing that; soon it will sound like a nice melody. And don't forget to put a title to your song!

The process of clustering, demonstrated and described above by a college freshman, is simple and it works. Why? Because it seems to gen-

erate active involvement of the right hemisphere of the brain in the act of composing, which is too often thought of as a logical, linear task to be tackled primarily with left-hemisphere skills. Composing, however, is a complex symbolic activity, and we are finding that such complex symbolic activity requires the balanced involvement of the learning strategies of both hemispheres of the brain.

Whether we accept recent brain research findings as fact or whether we sense in them nothing more tangible than a new metaphor grounded in the language of science, as metaphors often are, the implications for the teaching of composition are enormous. Accordingly, the purposes of this monograph are as follows:

1) To clarify those implications by reviewing some of the most important aspects of brain research, especially those relevant to composition.
2) To suggest and to describe a number of tested ways to balance hemispheric involvement in composing, such as the clustering process illustrated above.
3) To inform, to analyze, to describe, to make connections between research and practice, and above all, to generate interest in the huge potential for positive change in teaching strategies.

May this last purpose spur teachers to risk extending traditional boundaries in the teaching of composition.

The composing process as complex symbolic activity necessitates a kind of internal dialogue between whole and parts, between image and sequence, between configuration and specifics, between initially vague global idea and gradually emerging parts. In traditional approaches we have geared our teaching primarily to left-hemisphere processes such as grammar, outlining, paragraph organization, usage, and so forth. However, most of us know that the successful teaching of writing requires something more. But what that more is is often so nebulous and intangible that we feel frustrated in our efforts to encompass it. Brain-hemisphere theory is giving us an understanding of and a terminology for discussing those intangible aspects of composition, for effective writing also requires right-hemisphere processes. Therefore, back to basics in teaching composition may not mean trying harder at the same tasks, but may mean exploring new avenues to balance against the old. Marilyn Ferguson indicates that this expansion is essential in the light of new discoveries about how the brain works:

> We are just beginning to realize how fragile our consensus of reality is. Some of us process the world in an essentially crisp, analytical, one-step-at-a-time fashion. Others are seeing in a more fluid state, perceiving patterns, wholes, shapes, sometimes

unable to distinguish parts and make fine analytical discriminations. Still others operate alternately in both modes, sometimes analytical, sometimes holistic. And, of course, every mental function is also a blend of the two processes.[1]

II

An Exploration of the Implications of Brain Research for the Teaching of Writing

GABRIELE LUSSER RICO

Preliminaries

An elaboration of such brain processes as Ferguson describes necessitates some preliminaries, beginning with a distinction between animal and human brains. Animal brains and human brains have a number of basic functions in common, such as the control of movement and sensory analysis. In motor control, each side of the brain is concerned mainly with the opposite side of the body, as, for instance, with the muscles of the hand/forepaw and foot/hindpaw. In hearing, each ear has connections to the auditory cortex of the brain in both hemispheres, but the connections to the opposite sides are somewhat stronger. In sight, images from the right half of space in both eyes are projected onto the left visual cortex, and vice versa. Although left and right visual fields are separate, they are largely symmetrical in function in both animal and man.

Similarities between animal brain and human brain decline markedly with the more specialized functions of the human brain. Three of these specialized functions come immediately to mind: language, music, and drawing.[2] Language is universal among people: most of us in all cultures are capable of learning to speak, write, and read, however limitedly. Drawing is universal among people: most of us in all cultures are able to make simple figures such as circles, squares, rectangles, and so forth. Music is universal among people: most of us in all cultures are able to recognize and reproduce even complex melodies. Animals cannot. These specialized functions are profoundly asymmetrical in the human brain.

In additon, three other brain functions in humans appear to be asymmetrical although they are not yet too clearly understood: our curious and sometimes all-too painful sense of time; the expression of our emotional states and our recognition of them in others; and the most obvious, of course, our handedness. Approximately 90 percent of the human population favors the right hand. The non-human appears to have no preference except when specifically taught a task, as when one teaches a dog to "shake." These preliminaries point to a significant fact about the

human brain: its asymmetry is the most striking biological characteristic of the human being. This asymmetry, which generates differing cognitive talents, enhances our cognitive options and thus the creative capabilities of the total being.

Three Periods of Brain Research

Discoveries of brain asymmetry were made and expanded upon in three chronological periods according to Zaidel.[3] In the first and pioneering period during the 1950's, when it was still assumed that the right hemisphere of the brain was not much more than a bumbling backup for the left, researchers performed a historic operation that has radically altered our conceptions of how human beings know. The operation, performed to alleviate uncontrollable epilepsy, consisted of cutting the corpus callosum, that bundle of 200,000,000 nerve fibers connecting the two hemispheres. The hope was to prevent the electrical storm that is epilepsy from spreading to both hemispheres. The operation was a success; the epilepsy was contained. However, to their puzzlement, neurosurgeons found that despite the cutting of 200,000,000 nerve fibers connecting approximately ten billion nerve cells in the left hemisphere to ten billion in the right hemisphere, the patient seemed to function without obvious impairment of consciousness. This puzzlement led to the first of many sophisticated tests of the separated brains of such patients, and these tests gradually demonstrated not only hemispheric duality but hemispheric asymmetry; that is, they demonstrated that the processing of information in each hemisphere is performed in radically different ways. Thus, the most important finding to emerge from this first period was that the left hemisphere, which controlled linguistic functions in right-handed people, was good at verbal, logical, linear tasks, and that the right hemisphere was good at spatial/constructional tasks.

The second period of research extended the concept of brain asymmetry, increasingly specifying the different ways in which each hemisphere processes information. The left hemisphere was shown to be part-specific, focusing on detail but without an overall grasp of a configuration, whereas the right hemisphere was shown to be configurational, focusing on the whole but ignoring the details. For example, the left hemisphere, in looking at a face, distinguishes eyes, nose or mouth as critical features, each meaningful in itself, whereas the right hemisphere processes, recognizes and responds to the whole face. "A face," writes Paul Watzlawick, "is a moveable feast," noting it is almost impossible to describe a face unambiguously and analytically, that is, in left-hemisphere terms, to the extent that police find it necessary to use an identification kit.[4] The poem below by Barry Cole humorously plays on this difficulty:

REPORTED MISSING

Can you give me a precise description?
said the policeman. Her lips, I told him,
were soft. Could you give me, he said, pencil
raised, a metaphor? Soft as an open mouth.
I said. Were there any noticeable
peculiarities? he asked. Her hair hung
heavily, I said. Any particular
colour? he said. I told him I could recall
little but its distinctive scent. What do
you mean, he asked, by distinctive? It had
the smell of woman's hair, I said. Where
were you? he asked. Closer than I am to
anyone at present, I said; level
with her mouth, level with her eyes. Her eyes?
he said; what about her eyes? There were two,
I said; both black. It has been established,
he said, that eyes cannot, outside common
usage, be black; are you implying that
violence was used? Only the gentle
hammer blow of her kisses, the warmth
of her breath, the... Quite, said the policeman,
standing. But I regret that we know of
No one answering to that description.

Unfortunately, this second period resulted in a series of premature claims, in an oversimplification of research findings, and in a misapplication of emerging knowledge. However, Joseph Bogen, Los Angeles-based pioneer split-brain surgeon and lecturer on brain duality, has given these difficulties a proper perspective with his statement that

> there have undoubtedly been a number of over-interpretations of the implications of hemispheric specialization, just as there is an excess of over-interpretation of any scientific advance with wide but as yet unexplored implications.[5]

These unexplored implications continue to be studied in the current period. Researchers are verifying, revising, and refining findings of the first two periods. An important shift in findings has to do with what is important to us as teachers of composition: language. New research is showing that the earlier characterization of left-hemisphere and right-hemisphere specialization as a verbal/spatial dichotomy has been misleading and that language is processed by the right hemisphere as well as the left, albeit in radically different ways. Accordingly, Bogen has suggested that the difference between the two hemispheres is not so much content-specific, i.e., language in the left and spatial tasks in the right, as it is process-specific, resulting in the availability of two different conceptual

styles. These two processes can be analogously characterized as "splitting" and "lumping."[6] The left hemisphere splits the world into bits, into clearly definable, quantifiable, nameable parts, and it processes these parts one-at-a-time in sequential order, giving rise to logical thinking. By contrast, the right hemisphere lumps the world into configurations, into wholes, by bringing things into relationships with one another, and it processes the many stimuli of an apprehended configuration all-at-once, giving rise to holistic thinking. Moreover, in order to be able to process anything as a whole, the right hemisphere will fill in or ignore gaps. A look at four items of the Street "Gestalt Completion Test" (Figure 1) will illustrate. Focus on the pieces, and you have difficulty seeing the whole. Process the whole by ignoring or filling in what is missing, and you will recognize a configuration.

Figure 1

"Example of items used in the Street figure-completion test. Almost everyone recognizes the upper left, whereas only a few recognize the lower left; the other two are intermediate in difficulty." (From Bogen, *et al.*, 1972). (Reprinted by permission of the publisher from Roy Street, *A Gestalt Completion Test.* New York: Teachers College Press, Copyright © 1931 by Teachers College, Columbia University. All rights reserved.)

An apparently disorganized or unrelated group of parts for the left hemisphere becomes a meaningful whole for the right hemisphere despite incompleteness.

Interpretive Capabilities of the Right Hemisphere

The predilection of the right hemisphere for complex wholes throws light on its interpretive ability with respect to language. The right hemisphere is mute with certain notable exceptions: when an utterance can be processed as a complex whole or is conceived of as a whole—a song, lines of poetry, strings of swear words, aphorisms—the right hemisphere is able to give expression to it. However, with respect to language receptivity, Zaidel has recently demonstrated that the right hemisphere has a surprisingly rich auditory lexicon as well as a substantial visual and writing vocabulary on which to draw. But its linguistic abilities differ radically from the left hemisphere's linguistic abilities: left-hemisphere use of language is explanatory, literal, fixed; it conveys information in specific, unambiguous ways as, for example, in "a star is a large, self-luminous heavenly body." The left hemisphere can retrieve and string together words logically and syntactically; hence it is capable of propositional speech. Yet the left hemisphere is unable to process linguistic ambiguity, nuance, irony; nor can it make sense of metaphor, of, for example, "a star is a flower without a stem." The aspects of language depending on the flash-like illumination of a totality seem to be the province of the right hemisphere. Malcolm X's description of his poverty, processed literally, is nonsense:

> The day was to come when our family was so poor that we would eat the hole out of a donut.

However, processed as a complex image, this absurd statement suddenly gives us an approximate measure of what otherwise might be unimaginable for many of us: donut holes, the epitomes of nothingness, of absence, convey powerfully and humorously an impression of poverty far superior to a detailed catalogue of what items were missing from this family's shelves. Thus, spoken or printed words can evoke a complex of associations in the right hemisphere, forming a pattern, a *Gestalt*, an image. Similarly, as Paul Watzlawick has noted, the right hemisphere can create a whole face from the few lines of a caricature, identify a symphony from a single bar of music, recall a complex experience from a single scent.[8]

Another interesting observation by Watzlawick is the right hemisphere's lack of the concept of negation—not, nobody, never, nowhere. He gives a reason: "It is difficult, if not impossible, to represent the non-occurrence of an event by a picture." For example, in "I throw the ball" versus "I do not throw that ball," the latter sentence could be variously interpreted as "I hold the ball," or "I hide the ball."[9] One could argue that negation is a

linguistic feature of a sentence, thus a part-specific aspect of language which qualifies the global image; therefore, the right hemisphere misinterprets it.

Closely related to new discoveries about language capabilities of the right hemisphere is the finding that the right hemisphere has more ready access to the limbic system, the structure which governs our emotions. Evidence suggests that, although emotions are *discharged* through the limbic system, the right hemisphere can *interpret* and *give expression* to them. Two examples will bear this contention out. A patient with damage to the left hemisphere is very disturbed by his inability to speak and will usually go into severe depression and exhibit great frustration; that is, his intact right hemisphere is giving *expression* to feelings of helplessness and inadequacy. By contrast, a patient with damage to his right hemisphere appears unconcerned with his condition, as though he did not know anything was wrong; that is, his mechanism for emotional *response* is damaged. As a second example, a patient with damage to the left hemisphere cannot comprehend a propositional statement, a function of the left hemisphere, but can recognize the emotional tone with which it is spoken, be it angry or sad or ironic or loving. By contrast, a patient with a damaged right hemisphere readily comprehends the meaning of what is said because his left hemisphere is intact, but is extremely literal-minded and unable to respond to its humor or to its angry or ironic tone. The subtleties and nuances of language that require an emotional interpretation are the province of the right hemisphere. Such interpretations are qualitative in nature, not easily placed in the definitive conceptual bins of left-hemisphere analysis.

Left-Hemisphere and Right-Hemisphere Functions Contrasted

By way of summing up the bewildering array of research, let me contrast the differing functions of our two cognitive apparatuses:

1. The right hemisphere grasps the whole of a circumstance because of its image-making power, that is, its simultaneous integration of multiple input, whereas the left hemisphere is linear, sequential, algorithmic, part-specific, and logical.
2. The right hemisphere is capable of rapid, complex syntheses derived from relevant elements despite missing pieces, whereas the left hemisphere processes stimuli on a one-at-a-time basis.
3. The right hemisphere is skilled in combination, amalgamations, generalizations in images, whereas the left hemisphere does not grasp an overall *Gestalt*, but rather the pieces that constitute it.
4. The right hemisphere has a preference for unity, scanning the universe for similarity in dissimilarity, whereas the left hemi-

sphere has a preference for diversity, perceiving differences, classifying, categorizing, ordering.

5. The right hemisphere cannot learn by specific rules, nor does it benefit from error correction; instead, it requires exposure to rich associative patterns, which it tends to grasp as wholes,[10] whereas the left hemisphere benefits from narrow examples, from trial and error, and from learning by rule.
6. The right hemisphere perceives qualitative relationships which escape the linearity and logic of the left hemisphere, escapes propositional language, escapes factual description, whereas the left hemisphere is less successful in dealing with unnameable, unbounded, and novel experiences.
7. The right hemisphere is crucial for the recognition and interpretation of emotional cues, whereas the left hemisphere usually ignores these or makes inappropriate responses.

In short, the right hemisphere knows far more than it can tell!

With these two cognitive apparatuses, one "splitting" and one "lumping," we apparently go through life, often engaging either one or the other, depending on which hemisphere is best suited to the task at hand. Yet, as previously noted, complex symbolic activity such as writing requires not only the specialized talents of both hemispheres, but a constant shifting back and forth from a whole—no matter how vague or tentative—to its emerging parts, and back to a more clearly delineated whole. The whole is generated by right-hemisphere imagistic thought while the parts are ordered by left-hemisphere sequential thought. Both are rooted in another asymmetrical function briefly mentioned above: human time-consciousness.

Image Prediction and Sequence Prediction

The philosopher Tobias Grether calls man *Homochronos*, time-conscious man, because, unlike animals, we are driven to action by our sense of the future and of a remembrance of our past.[11] The poem below by W. H. Auden powerfully, though ironically, points to this fundamental difference between animal and human:

PROGRESS

Sessile, unseeing,
The Plant is wholly content
With the Adjacent.

Mobilised, sighted,
The Beast can tell Here from There
And Now from Not-Yet.

Talkative, anxious,
Man can picture the Absent
And Non-Existent.

Precisely because the human being can *picture* the absent and non-existent, can he think about a poem he wants to write (e.g. love-painful-sweet-yearning), a vacation he wants to take (e.g. sun-warm-sand-relax-blue sky-tan), an essay he has to write (e.g. childhood uneasiness-fear of dark-locked in closet-paralyzed). That thinking process may be described as all-at-once, quicksilver image prediction and is the province of the right hemisphere. But unless he can also form sequences of *how* to make the essay, the vacation, the poem into a reality, the picture will remain a fleeting phantom. That thinking process is reflected in one-at-a-time, laborious sequence prediction and is the province of the left hemisphere. Both modes are necessary to complex symbolic activity. The first person who looked at the stick in his hand and the stone on the ground and saw them not merely as stone and stick but as potential weapon and tool projected a complex image of an as yet non-existent future—which might well have included the satisfying image of hitting the enemy on the head while remaining well out of arm's reach.

Let us look at the importance of image prediction in human thought. Accounts of authors and scientists are replete with the power of image prediction, which might be defined as a tenuous advance organizer. For instance, asked about how he composed, C. S. Lewis wrote:

> One thing I am sure of. All my seven Narnian books, and my three science fiction books, began with seeing pictures in my head. At first they were not a story, just pictures. *The Lion* all began with a picture of a Faun carrying an umbrella and parcels in a snowy wood. This picture had been in my mind since I was about sixteen. Then one day, when I was about forty, I said to myself: Let's try to make a story about it.[12]

Darwin's earliest notebook entries show his theory of evolution through natural selection to be rooted in the image of an irregularly branching tree (see Figure 2). His accompanying notations indicate that he was seeking a still more appropriate image for the theory, an image that was to be articulated many years later: "The tree of life should perhaps be called the coral of life, base of branches dead, so that passages cannot be seen."[13]

Einstein's description of his own creative process points to a clear distinction between image prediction and sequence prediction:

> The psychical entities which seem to serve as elements of thought are certain signs and more or less clear images which can be

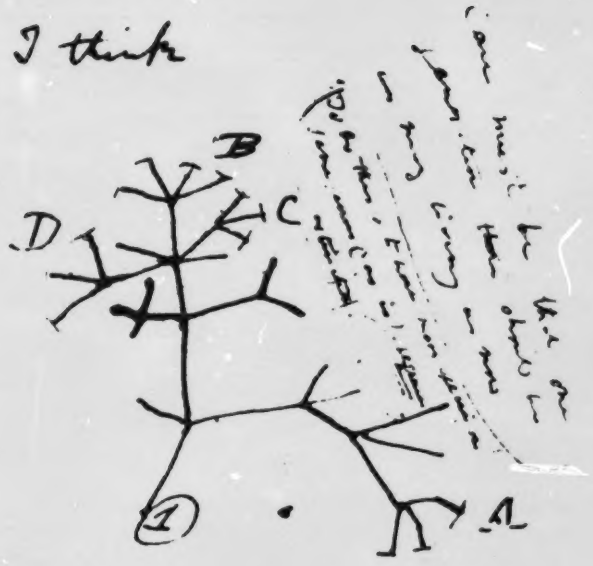

Figure 2
(Reprinted from *On Aesthetics in Science* edited by Judith Wechsler by permission of the MIT Press, Cambridge, Massachusetts. Copyright © 1978, courtesy of the Syndics of Cambridge University Library.)

> "voluntarily" reproduced and combined.... This combinatory play seems to be the essential feature in productive thought—before there is any connection with logical construction in words or other kinds of signs which can be communicated to others.... The above-mentioned elements are, in my case, of visual and some of muscular type. Conventional words...have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.[14]

These image projections, called "thought experiments" by Einstein, eventually led him to his stunning theories. Only sixteen when he initiated his first thought experiment, he imaged what a light wave would look like to an observer riding along with it. In another, he imaged a man in a falling elevator; this experiment led to his general relativity theory. In yet another, he imaged his curved four-dimensional space-time continuum as a "suspended rubber sheet stretched taut but deformed wherever heavy objects —stars, galaxies, or any other matter—are placed on it,"[15] as illustrated in the following diagram (Figure 3).

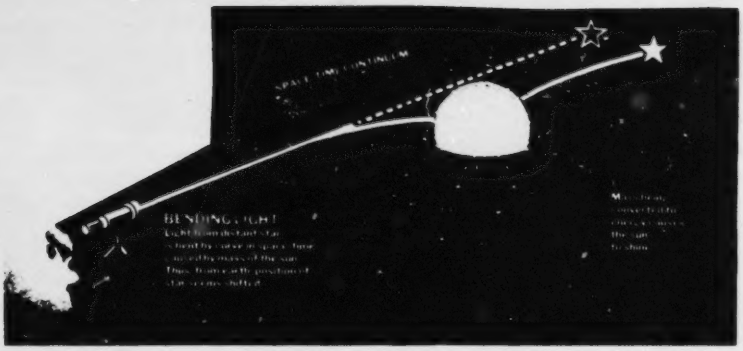

Figure 3
"The Master's Universe" (Reprinted by permission from *Time, The Weekly Newsmagazine;* Copyright © Time Inc. 1979.)

And Goethe as a boy saw a puppet show depicting the life of a man named Faust who sold his soul to the devil in exchange for all knowledge. He wrote that the complex images of this marionette play stayed with him all his life "echoing and humming about me in every key" until he finally completed his own masterwork of *Faust,* but not until the year of his death.[16]

So, too, a youthful Copernicus, with virtually no instruments available to him except an astrolabe, envisioned an image of the sun—not the earth—as the center of the universe, an image prediction that helped usher philosophy, psychology, and astronomy into the modern world.

Finally, the contemporary writer, Joan Didion, says that all of her writing is governed by the pictures in her mind, that writing is actually a way of discovering what is going on in these pictures; that writing is a way of making the pictures coalesce, connect, and take on meaning.

> Let me show you what I mean by pictures in the mind. I began *Play It as It Lays* just as I have begun each of my novels, with no notion of "character" or "plot" or even "incident." I had only two pictures in my mind.... The first was of white space. Empty space. This was clearly the picture that dictated the narrative intention of the book.... The second picture was of something actually witnessed. A young woman with long hair and a short white halter dress walks through the casino at the Riviera in Las Vegas at one in the morning. She crosses the casino alone and picks up a house telephone. I watch her because I have heard her paged, and recognize her name: she is a minor actress I see around Los Angeles from time to time, in places like Jax...but have never met. I know nothing about her. Who is paging her? Why is she here to be paged? How exactly did she come to this?

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> It was precisely this moment in Las Vegas that made *Play It as It Lays* begin to tell itself to me...[17]

And like Einstein, Didion attests to the multi-sensory nature of image prediction, rather than the exclusive visual nature we usually associate with the word *image*. In describing the dominant image that guided the writing of *A Book of Common Prayer*, the Panama airport at 6 A.M., she refers to sensory images of touch, texture, sound, kinesthesis, vision:

> The way it looked that morning remained superimposed on everything I saw until the day I finished *A Book of Common Prayer*. I lived in that airport for several years. I can still feel hot air when I step off the plane, can see the heat already rising off the tarmac at 6 A.M. I can feel my skirt damp and wrinkled on my legs. I can feel the asphalt stick to my sandals. I remember the big tail of a Pan-American plane floating motionless down at the end of the tarmac. I remember the sound of a slot machine in the waiting room.[18]

On a more practical level, the research of child development specialists John and Sandra Gadell suggests that image prediction plays a central role in a child's cognitive development. The best toy, they say, is a simple set of unpainted blocks. A block can be imaginatively transformed into anything: "If you show me a kid who can build with blocks and imagine a large city, I can show you a kid who will probably not have trouble with his reading," they write. Any child with the ability to imagine blocks as something else has become accustomed to the idea that blocks are symbols for something else, be it a city or a truck; such a child "will more easily understand how printed words on a page can stand for ideas and a brightly colored map can symbolize a far-off country."[19]

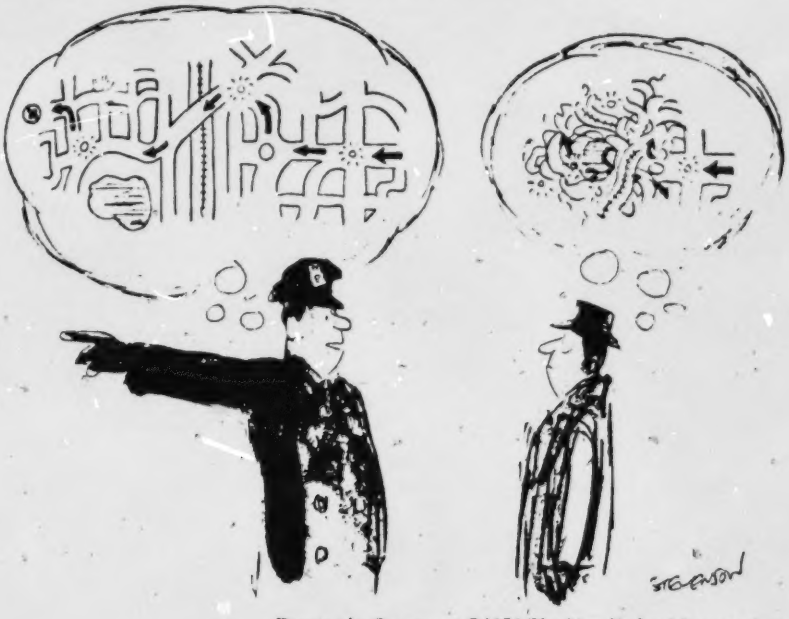
Bringing the question of image prediction closer to schooling, let us examine reading: in reading, the right hemisphere seems to generate and hold the shifting configurational framework for the text while the left organizes the sequence of events, notes detail, analyzes the logic of a writer's propositions, and processes letters, words, and syntactic information. If a child gazes off into space during reading, she may well be daydreaming on the one hand, but on the other, she may be striving precisely for a conceptual framework within which to fit the individual pieces of information she is processing. Such image projection allows a reader to speculate about what may happen later on in the story, to connect what she is presently reading to earlier events of the story, and to become aware of the less easily definable aspects of reading, such as repeated images, nuances and subtleties of language, metaphors, puns, paradoxes, and other ambiguities which serve to unify and enrich the experience.

Examining image prediction from a teaching standpoint, we can say

that to teach sequences without giving students the resources for attaching them to unifying images is confusing at best, counterproductive at worst. In fact, such learning is tantamount to memorizing random numbers or random rules without being told their usefulness. The best teachers seem naturally to provide their students with images to give them a wholistic framework into which the details will fit as they are delineated. Buckminster Fuller, for example, began one of his speeches as follows:

> The planet Earth is a spaceship. It has 150 sovereign admirals, or nations, with the admiral in stateroom thirteen trying to sink the admiral in stateroom fifty-eight...and the port trying to sink the starboard.[20]

This vivid image of the earth as a spaceship enabled Fuller's audience to grasp the details of what followed more readily than if he had begun with a propositional statement. Since metaphor selects only relevant detail, condenses, compresses, and points to relationships, it excels in economy. A compact image unites. Image prediction represents one of the mind's strategies for protecting an individual's limited capacities from the confusion of overloading. The following cartoon (Figure 4) gives a humorous—and all too familiar—example of the impossibility of loading the image-making right hemisphere with left-hemisphere sequences.



Drawing by Stevenson, ©1976 The New Yorker Magazine Inc.

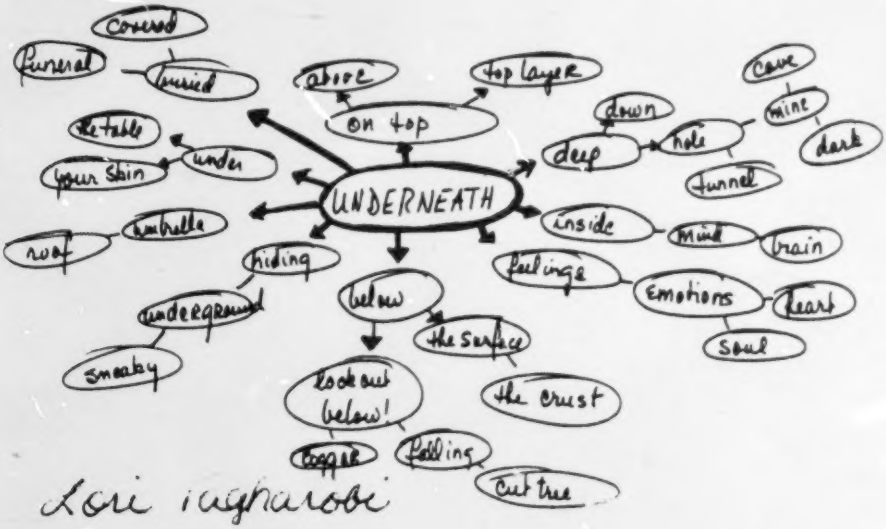
Figure 4

Applying the foregoing description of right-hemisphere image prediction and left-hemisphere sequence prediction to composing, one can see that composing is a creative act: the shaping of something from nothing through the medium of words requires the active involvement of both left and right processes. Yet we spend many years of schooling teaching our young people the sequential aspects of composing—we teach grammar; we teach paragraphing; we teach the forms of exposition; we teach usage; we teach spelling—and for good reason, for they are important tools. Yet, as many teachers of English already know, that maze of grammar sequences—as well as the multitude of other sequences we have devised to teach composition—without a corresponding emphasis on right-hemisphere development will be unlikely to make students better writers. "I know," you might say, "but don't we project images automatically? Do we have to teach those skills?" I would have to respond: Indeed we do; we cannot stop the right hemisphere from forming images of the absent and the non-existent. But, as with left-hemisphere skills, we confront the question of *quality*, as Robert Masters argues:

> What we qualitatively require of the right hemisphere must not be inferior to what we require of the left. About the necessity for good qualitative use, we need have no doubts. If it were not so, then the hours at the TV set, or just processing the world around us, would meet the right hemisphere's needs.[21]

As teachers of English we all *want* students to become better writers. But wanting them to do so and enabling them to do so are unfortunately two different things altogether, a regret echoed by the biologist R. W. Gerard in his observation that "to teach rigor while preserving imagination is an unsolved challenge to education."[22] But we are slowly but surely learning new ways to complement the old. As indicated at the beginning of this paper, one approach which grew directly out of my study of brain research is the clustering process, an example of which opens this monograph. Briefly, clustering is a generative, non-linear, and visual process which utilizes the image-predictive mode. Although it utilizes words and phrases, generally thought to be a left-hemisphere function, clustering circumvents left-hemisphere syntactic constraints and draws on the right hemisphere's ability to generate a tentative whole from limited but relevant elements. In introducing clustering, I tell students that it is a process which focuses on the pre-writing phase of composing, a phase as critical as the final writing phase itself. Most simply put, it externalizes a thinking process already available to the human being. In order to practice clustering, students make a daily ten-minute journal entry based on a stimulus word written inside a circle on the board. Students are then instructed to radiate outward from the center with as many associations as come to them in a brief period of time—say, one to two minutes at most. I tell them, "Cluster until something is triggered in your mind—a tentative

whole—that you think you can write about in the remaining eight or so minutes and begin writing." They may use one, some, or all of the ideas generated in the cluster with the objective of shaping a coherent whole within the time limit. The following cluster and the resulting writing by a college freshman—all done within a ten-minute span—will illustrate the process:



> Deep down inside of me, underneath the surface of the me who pretends to be someone else, the real me exists. My surface person tries to ignore and suppress my true self, but truth and reality eventually wind up the victors. I have feelings so deep in my soul, emotions so firmly embedded in my heart, convictions so permanently ingrained in my brain, that I cannot escape their influence, no matter how hard the I, on the surface, tries to pretend they do not exist.

Clustering helps students to discover *what* they might be able to write about—and to discover, sometimes to their surprise, things they already know—before they are asked to engage in sequential skills. In clustering, words are triggered by associative images to shape a tentative projected whole. Moreover, each word inside the circle seems to be a miniature whole in itself, since the associations are primarily triggered by images. For example, if you explore the cluster produced by the stimulus word "underneath," you can almost see how the response "deep" was triggered by images of holes, tunnels, dark mines, and caves. The principal effect of clustering appears to be the circumventing or blocking of the logical, critical, sequential censorship of the left hemisphere, encouraging image

prediction by making normally silent, invisible, mental processes both visible and manipulable, hence both teachable and useable in the classroom. Finally, clustering makes students aware that words, phrases, numbers are multidimensional entities from which can radiate as many different associations as there are individuals to connect them.

Additional classroom benefits are noted by Mary Lou Munson, teacher of English at Wooster High School, Reno, Nevada, in the following description of her use of the technique:

> In the classroom, clustering has engendered an enthusiasm for writing unparalleled in my teaching experience. I have students cluster for ten minutes at the beginning of each class period. On the first day I distribute "cluster packets" (a stack of stapled-together sheets of notebook paper) and explain the process and philosophy of clustering. The class and I together cluster two or three words on the blackboard, and the students are then given a word to cluster individually in their cluster packets. They are instructed that in the future they should look at the blackboard as they enter the room. If they see an encircled cluster word on the board, they get their cluster packets from the theme box designated for their class period, cluster the assigned word, write a paragraph, and return their packets to the box. I explain to the students that while I will read their clusters, I will neither mark nor grade them. I have found that the students are so eager to make use of every minute of their allotted clustering time that on clustering days I am not surrounded by students clamoring for individual attention before the tardy bell; as they write quietly at their desks, I check roll and peacefully organize the work for the period. Another beneficial by-product has been that no one asks, "Is this for a grade?" Nor have I ever been asked, "Do we *have* to do this?"
>
> The real profit gained from clustering is not limited to the students' enjoyment and enthusiasm. I feel that the quality of their writing has been noticeably improved through clustering. In vain, during years of countless writing assignments, have I tried to impress upon students that papers composed of broad generalities and "grocery list" items ("skiing is a sport that requires many pieces of equipment:...") are neither interesting nor worth writing. Clustering eliminates such problems. Each individual's associations with and reactions to a cluster word are unique and personal and therefore result in interesting paragraphs.
>
> As a teacher I have concluded, since I have begun using clustering, that my system of requiring a worksheet containing a statement of purpose, a list of ideas, and an outline organizing

those ideas in a "logical" order may not be the best method of teaching most students to write well. I am at a loss to explain why the results did not long ago convince me of the frequent failure of that method. In a recent "department theme" assignment in which I so far relaxed my rigidity as to allow the students a choice of clustering or the traditional form of worksheet, only three of one hundred twenty students chose to use the traditional form.

Since our image-predictive capabilities represent the open end of human potential, the way around excluded possibility and severe loss is to expand them, not in place of, but in addition to, our sequence predictive powers. Accordingly, we must provide enabling activities for developing right-hemisphere as well as left-hemisphere processes, for metaphor as well as logic, for clustering as well as outlining, for tentative connections as well as final product. Part III of this monograph describes other tested ways for doing so.

III

An Approach to the Teaching of Writing Based on Applications of Recent Brain Research

MARY FRANCES CLAGGETT

Prologues to What is Possible

There are two extremely timely reasons for teachers of writing to become familiar with recent brain research and its potential for the classroom. First, many teachers will find in this research a revelatory validation for techniques they have long practised in the classroom but were unable to justify beyond the "It works" gesture. Second, in the educational climate in which we must assess and account for the learning of our students, we need to understand and be able to interpret to parents, as well as to other members of the school community, the essentials of a balanced approach to teaching basic skills. In addition to these practical reasons, the research itself provides us with new models of thinking about learning. Whether we come to this study as theorists looking for a scientific model for understanding the composing process or as poets caught by the metaphor of right and left, sun and moon, linear and holistic, we have riches before us.

The idea that the two hemispheres of the brain process information differently is immediately suggestive. Our language is filled with dichotomies that reflect two ways of perceiving; suddenly the ancient associations of *sun* with rational thought and *moon* with intuitive thought have additional impact. The research reveals that the left hemisphere of the brain (in most right-handed people) is specialized for sequential, linear thought; it is the dominant hemisphere for most kinds of language production and recognition. The right hemisphere, on the other hand, is specialized for the ability to perceive the large pattern of things; it is the dominant hemisphere for spatial perceptions, for seeing things whole.

Sorting out which of the composing activities are primarily left-hemisphere oriented and which are right-hemisphere is, at this stage in our understanding of the brain, an inexact activity. There is an indication now, for example, that the right hemisphere has a greater capacity for some language functions than was previously thought. I wish to underline my use of the research in a cautionary way, relying more heavily on the

metaphor than on the as-yet-incomplete scientific data available to us. The large distinctions, however, seem to be firmly grounded. The entire question of handedness, always fascinating to explore, will be omitted in this monograph; it is explored in the research listed in the bibliography.

Right-hemisphere modes of perception seem to me to be essential during the pre-writing process, whether that process takes place at the level of awareness or not. Many people share the experience I often have of sitting down to write and having the entire piece (frequently a poem for this type of experience) come at a sitting, generally requiring little or no revision. I have come to identify this mode as a right-hemisphere mode since the structure, the whole, is present without conscious manipulation of sequence or logical thought. Other people are much more likely to sit down, write a rough draft, revise, write another draft, and so on until the work is finished. Many of these individuals describe a self-consciousness during the act of writing that acts as editor or censor. This process seems to me to be more dominantly left-hemisphere oriented. Of course, both modes are involved, but one seems to be dominant.

In order to translate this knowledge of different ways of approaching the writing task to the classroom, I try to design experiences that directly involve both modes of perceiving. It is easy to assume that our students process a task the same way we do, but we may be making a false assumption. In order to provide a balanced approach to the teaching of writing, then, I try to allow for the right-hemisphere modes by encouraging clustering, body movement, color, image-making, metaphoric thinking, rhythm, design. I try to enhance the left-hemisphere modes by providing exercises for sequential thought, for precision, for understanding of transitions, for step-by-step progression of idea. The left-hemisphere modes are utilized, too, in the careful editing that must be done before any work is ready for publication, whether publication means the classroom wall, the refrigerator at home, the school newspaper, or *Literary Cavalcade*.

In working out my integrated approach to the teaching of writing, I have adapted James Britton's terminology to discuss modes of writing as they relate to right- and left-hemisphere functions. Britton uses the terms "expressive, transactional, and poetic" to describe writing that serves different functions.[23] Expressive writing is informal or casual, usually written for the self, and characterizes the kind of writing that many English teachers see in journal writing or "free" writing. Transactional writing is that writing which is used to inform, to instruct, or to persuade. In the other direction, poetic writing moves into the realm of art and includes the story and the poem.

Transactional ⟵ Expressive ⟶ Poetic

The importance of Britton's conjectures about the ways in which we apprehend different kinds of writing has not, I think, been discussed in the context of our knowledge concerning current brain research: Britton suggests that readers apprehend transactional writing *piecemeal*, whereas

they apprehend poetic writing *as a whole*. His comments can be directly applied to the two kinds of hemispheric functions: piecemeal apprehending of transactional writing appears to be primarily a function of the left hemisphere; while apprehending poetic writing, the kind that can be seen as a whole, seems to be largely a function of the right hemisphere. These are, of course, rough perceptions, but seem to be largely descriptive of the different kinds of experiences the two kinds of writing engender.

In order to bring these ideas into the classroom, we can begin to distinguish types of assignments with relation to the dominant process involved. If we are going to assign an essay of persuasion, for example, we know that we are expecting the student to arrange linear, logically-connected *pieces* of information into a whole that, in itself, will be read *piecemeal*. If, on the other hand, we assign a short story or poem, we need to be able to help the student utilize the *holistic* aspects of composition, understanding, too, that the work will be apprehended as a *whole*. Both kinds of writing, as Britton says, proceed from the matrix of expressive writing, the kind we find in journals, in daily logs, in letters. It is important to remember that these distinctions are often not pure distinctions. In transactional writing, the writer may move into the poetic function to illustrate with a story the main idea of the piece. And, conversely, in poetic writing, the purposes of persuasion or instruction may be operating. Essentially, however, according to Britton, we should design our assignments to allow for ample expressive writing, carefully considered kinds of pre-writing, and clearly focused directions for the ultimate purpose of the assignment which will move it along the spectrum toward either the transactional or the poetic. My plea is that we balance our instruction and involve both right-hemisphere and left-hemisphere modes of thinking in our writing program.

Before describing specific classroom applications involving the right-hemisphere mode (our literature abounds with those involving the left-hemisphere), I would like to suggest that our methods of evaluation can be built into assignments and be directly based on Britton's concepts of reader apprehension. Expressive writing may be accepted without judgment, but with close attention to possibilities in either of the other functions. (Much expressive writing, of course, is not developed further; it exists as a valid response in its own right. This kind of writing would not be "graded" other than perhaps recording the student's having done or not done it.) Transactional writing lends itself to analysis, the kind of marking that all of us are accustomed to doing, although here, too, I feel we should constantly be aware of our expressed purpose in the assignment and use our marks discretely. Poetic writing calls for a holistic response, followed by an analysis of why the entire piece worked or did not work. We need to be able to help the student understand how to look at the elements without losing the whole: how to deal with individual word choice in a poem while keeping the rhythm and the form in focus.

While each kind of writing has a dominant function, its success as a whole depends on the development and accessibility of both hemispheric modes of processing information. Britton's line depicting the spectrum from expressive writing to transactional in one direction and poetic in the other could well be extended to complete a circle so that the poetic and transactional come together through the element of symbol. The ultimate in transactional symbol, suggests Judy Salem, a mathematics teacher, is the mathematical expression of numbers; and number, manifested in rhythm, rhyme, and symbol, has always been central to poetry.

A Seeing and Unseeing in the Eye

The art of changing focus is as essential to the writer as it is to the photographer. In order to "pay attention," one must learn not to pay attention. When we wish to see color and detail, we employ the cones in our eyes, the cells that allow us to see sharp distinctions. When we attend to the blurred edges of our vision, the gray area that gives us both warning and awareness, we employ the rods. When we teach our students to make a formal outline before writing and to follow that outline in the writing of the paper, we are asking the student to write with the equivalent of the cones, everything in sharp detail, in focus. There is no room in the process of writing from a linear outline for the unexpected connections that occur as the words themselves begin to lead us to new insights about our subject. This kind of writing, generally transactional, has its place in the curriculum. It is my position, however, that even this kind of writing will be vastly improved if the formal outline is preceded by right-hemisphere oriented pre-writing exercises.

On the other hand, if we ask our students to begin by writing the first thing that comes into their minds, to let their writing proceed without thinking, we may get some very imaginative bits and snatches, some interesting connections among the dross, but rarely (the exceptions relate to those whose pre-writing is done without conscious awareness) a finished piece of writing. This kind of writing can be utilized in a more structured way by setting up specific situations that enable the right-hemisphere modes of perceiving to be tapped.

In order to employ both the seeing and the unseeing, the cones and the rods, the linear, sequential thought processes of the left hemisphere and the holistic, intuitive processes of the right, we must move back and forth between the polarities, drawing first on one, then the other before the "edgings and inchings of final form" that Wallace Stevens speaks of are imposed or discovered.

I came to the study of brain research and its implications for understanding the process of composing as a teacher and as a writer sensing a new metaphor. I began to think about the elements of the writing process as requiring sequential thought (left hemisphere) or overall

holistic perception (right hemisphere). I began to put together ideas about the process of writing with problems of teaching writing. I began to look through files and collect evidence of writing assignments that used what I now call right-hemisphere modes of learning as well as the more common left-hemisphere modes. As I experimented with my students in applying specific aspects of different modes of thinking, I also began to explore ideas with other teachers, taking sample assignments to conferences and workshops for teachers. And teachers began sending student work to me, trying out the ideas that I present here for other teachers to try, to adapt, to reject, to embrace, but above all, to make, in some way, their own.

Not Ideas About the Thing, But the Thing Itself

A number of the following assignments will be familiar to many teachers; some will be new. In each case, I will try to place the activity in the context of right-hemisphere or left-hemisphere mode, indicating, too, where the activity falls in the writing process. The first group of activities has to do with helping students focus their attention; they are primarily right-hemisphere activities used as pre-writing exercises.

FOCUS... by framing
by coloring
by centering
by titling
by shaping
by clustering

Framing

Literally, frame the space to be used for writing. Draw a circle on the page. Draw a rectangle. Cut out a shape with construction paper. Provide the unexpected in the outline and give the assignment as usual.

This technique, utilizing the right hemisphere mode of spatial perception, works especially well with students who have severe writing problems; high school students who resist writing on lined paper sometimes do amazing work when they write with crayons on unlined white or colored construction paper. It is an easy transition from this exercise to comic strip writing in which the dialogue is written within the balloon frames, and it is another easy transition from the balloons to quotation marks. As students become fluent, they go back to the lined paper but draw a margin all the way around.

Coloring

Whenever possible, I include color in pre-writing assignments. I have on hand colored construction paper, crayons, felt markers, colored pencils. Color will be an important element in some of the assignments that

I describe in detail later, but one beginning exercise, which incorporates framing, is this one: I ask the students to think of a place (their room, a favorite vacation place) and draw just the outlines of a scene, using color. The terminology of photography is useful here; I have them pretend to be taking a picture of the scene, forcing them to take a position (translated later into point of view) and concentrate on framing the picture as a camera does. After they finish the drawing, I ask them to describe just what they have drawn, including each detail, using color in words as they have done in the drawing. After that pre-writing exercise, I ask them to put two people into the drawing, if the picture had no people, and write a conversation between the people that makes clear where the dialogue is taking place. This activity (a right-hemisphere activity) integrates different elements of the previous activities and may lead to script writing for class presentation.

Centering

Many students who have difficulty in focusing their attention profit from guided-imagery exercises—pre-writing activities that create a specific situation out of which they write, frequently with unaccustomed enthusiasm. I have found that writing students do after guided-imagery exercises often possesses strong visual imagery. One guided-imagery assignment follows: I ask students to close their eyes and imagine a building. They go into the building; they discover that it is a library, but this library contains only books that have not yet been written. They look around, browsing among the titles and noting the shapes. They take some books off the shelves, feel them, look through them. Finally, they pull off the shelves a book they want to read, the book that they would most like to read, if only it had been written. They note the title of the book, feel it in their hands, examine the cover, and look at the chapter titles. Then I ask them to open their eyes and, before talking to anyone, write down everything that they saw, including the description of the book. For those students who did not "imagine" anything, I ask them to record their feelings during the experience. After they have completed this expressive writing, they go to the school library and look at book jackets, examining them for cover design, book summaries, biographical sketches, and reviews on the back. Their assignment (making use of color and the right-hemisphere functions of design and shape, as well as the left-hemisphere functions of summary writing, biographical-sketch writing, and critical review) is to design a complete book jacket for a book that has not been written, but one they would very much like to read. It may or may not be the one from the guided imagery experience. I have found that about two-thirds of the class do use the book from that experience; others either change their ideas or did not have a book in mind to bring back from the magical library.

When the book covers are finished, I spend about two class periods

having students read them. Each student writes a response comment about each book jacket; the responses are signed and stapled inside the book covers. A class that is used to group editing and group criticism responds well to this aspect of the assignment. After all book jackets have been shared, they go on the bulletin board, our manner of publishing.

Titling

Titling deserves special mention as a right-hemisphere-integrating activity because of its double function. It not only focuses the prospective reader's attention, but it also focuses the writer's eye. I like to have students use a working title, then reconsider the title after the work is finished. The best titles, in my opinion, attract the reader, and in addition, assume a greater significance to the reader after the work has been read. Sometimes I will have students leave a work untitled and ask their editing partner to title it; if it is impossible to title the work, perhaps it lacks focus.

Some titles, of transactional works, for instance, are best kept purely informative; here the key may be in accuracy of focus. Still the titling is an integrative, right-hemisphere function as it requires the writer to hold the whole piece in mind before deciding on an effective and accurate title. I try to emphasize the value of the working title as a narrowing device in transactional writing, leading to the more complete definition of the thesis statement, a left-hemisphere function which identifies the parts and directs their order in the entire work.

Shaping

In addition to the physical shaping of paper as mentioned in the section on framing (actually giving students paper in the shape of circles, triangles, etc., or having them create their own shapes), I try to teach students how to shape their words. On the most graphic level, concrete poetry shapes words into the representation of the poem's subject. Students like writing concrete poems; it is an activity that involves both the right-hemisphere functions of space and design (and color, if you wish) and the left-hemisphere function of arranging parts within the whole. On the more complex levels, shaping a poem, a story, or an essay requires careful attention to the whole while simultaneously manipulating the parts. After they have completed pre-writing exercises, I like to have students write the first draft of any of these forms at a single sitting, if possible. Teaching students to suspend the critic in themselves is important in allowing the right-hemisphere function of holistic perception to operate in designing the shape of the whole piece. It is also important for students not to talk too much about a poem or story before the first draft has been completed. After that, talk can be very useful as the left-hemisphere function of critic begins to edit, shifting parts, deleting, or expanding within the framework.

Clustering

Clustering (as Gabriele Rico explained in the preceding section) is a simple technique which lifts the familiar concept of brainstorming into a new dimension. Instead of brainstorming by word or phrase association in a linear fashion, or in a random fashion, students are shown how to cluster by centering the key word or phrase, circling it, then allowing each idea to run its course in a line of related words or ideas. When a new idea occurs, the student begins again at the center and follows the course of associations for this idea. She continues this pattern until ideas begin to run out or until one of the ideas becomes very strong. At this point, the student stops clustering and begins writing. This exercise, used for ten minutes several times a week, results in brief, tightly constructed paragraphs marked by strong use of specific details. The benefit of the clustering comes from the spatial arrangement of the cluster (a right-hemisphere, open-ended structure) in contrast to the linear arrangement of the typical brainstorm.

Clustering works for first graders. It works for high school students. It works for the slow student and the bright. For the student who has been academically successful, it may be difficult at first; some of our successful students are, by the time they are in high school, locked into left-hemisphere modes of operating. It is exciting to allow these students to explore activities that call upon the other half of their brains.

In an elementary school where I worked with teachers who were developing a K-6 writing curriculum (see Appendix, pp. 43-44), every teacher experimented with clustering. The reports, after four weeks, were surprising. I had expected to hear of increased fluency. I had expected to find increased use of specific detail. What surprised me was that teachers reported, in addition to the above benefits, that students wrote with increased coherence, with a more sophisticated sense of how to expand and develop ideas, and with more mature sentence patterns (greater variety as well as increased use of cumulative and complex sentences).

After students have experienced clustering, followed by paragraphs stimulated by the clustering, I introduce the idea of clustering related words on the same stem or of color-coding the cluster in some way to show possibilities for organizing a piece of writing. For example, I might ask them to color all the concrete words one color and all the abstract words another. This activity gives students an insight into whether they were thinking in generalities or in sensory images or, perhaps, in events. From the color-coded clusters, students can write different kinds of pieces. The cluster provides a large pattern (right hemisphere) within which many different arrangements of parts (left hemisphere) are possible. In the Appendix, pages 45-49, I have included several clusters drawn by students as pre-writing activities. The relationships between the clusters and the writings reveal intricacies of thought that can give us additional

insight into the composing process in general and into individual thinking processes as well.

In addition to its use as a pre-writing activity, clustering works as a pre- and post-assessment of a student's knowledge about a topic—an idea, a book, or a film. It is useful as a quick review of a unit or a course. I frequently use it to help students pull together the primary impressions of a film or story. They use the right-hemisphere mode as they cluster overall design and shape; as they begin to fill in the events, the relationships of the characters, the importance of the setting, they must move between the two modes to achieve a whole with all of its parts in a meaningful relationship. These clusters may be done quickly; they may be evaluated quickly. They can tell the teacher how much discussion is necessary before an examination or an essay is assigned. Students feel a sense of accomplishment when they have finished a cluster; they know, as they begin the writing to follow, that they do, in fact, have something to say. They are not facing a blank piece of paper.

The Motive for Metaphor

Noticing that color-coded clusters assume interesting and diverse shapes, often giving clues to the kind of writing that emerges from the pre-writing exercises, I expanded the concept of combining word, image, color, and design into mandala patterning, a technique that integrates both right- and left-hemisphere functions in a variety of assignments that include both pre-writing and assessment.

The mandala, a Sanscrit word for center, is a design that usually has a highly defined center and often has a complex, symbolic pattern with four or more clearly delineated segments representing colors, psychological functions, geographical directions, or states of mind. Jung considered the mandala to be the archetypal symbol for uniting the four aspects or functions of a person's character, i.e., sensation, intellect, feeling, and intuition.[24]

Rhoda Kellogg, a well-known pre-school art educator, discovered as she worked with children's drawings that all children draw a simple mandala at a specific stage in their development. As she began to conduct research, which led her eventually to study some two million children's drawings from many cultures, she observed that the archetypal shape of a circle with a cross inside occurred in the drawings of every child in every culture. In her follow-up studies, she found a positive correlation between the development of the reading and writing skills of children and the opportunities they had had to scribble and draw, discovering their own mandalas by combining the physical movement of drawing, use of color and design, and image-making into the precursors of what would later become writing and art.[25]

The Sun-Shadow Mandala

The Sun-Shadow Mandala assignment grew out of the old classroom game

of "What animal are you most like?" As I expanded this exercise to include plants, colors, and numbers, I introduced the idea of creating a mandala to portray, symbolically, characteristics of both the sun (the left-hemisphere, outward aspects of the self) and the shadow (the right-hemisphere, inward aspects). To reach the shadow elements, I found that I had to teach students how to bridge the specific images of sun and shadow with descriptive words. By instructing each student to work from concrete images to the qualities the images suggest, I found an opportunity to have them work successfully with the concepts of concrete and abstract.

To begin the mandala assignment, the teacher says to the students:

I. To find your sun-self, answer each of the following questions:
   1. What *animal* are you most like?
   2. What *plant* are you most like?
   3. What *color* are you most like?
   4. What *number* are you most like?
   5. What *kind of weather* are you most like?
   6. What *geometrical shape* are you most like?
   7. What *mineral (rock* or *gemstone)* are you most like?

   Beside the name of each of the responses above, write one word which best describes the essential quality of each word for you. (The teacher may include instructions here to write a *because* sentence for each: "I am like a sunny day because I am always happy.")

II. To find your shadow-self, for each of the *quality* words above, find a quality word that means as nearly the opposite as possible. (For example, if you have selected *mouse* for the animal because it is *small*, you might select the word *gigantic* as the *opposite quality word.)* For each of these opposites, then, select a specific animal, plant, etc. These words will be your *shadow* images. (The student above, for example, selected *grizzly bear* as her *shadow animal* that was *gigantic*, in contrast to her *mouse*, which was *small.)*

III. To make the Sun-Shadow Mandala, draw a circle on plain white paper. Inside the circle, draw or represent all of your sun images and all of your shadow images. Create your own arrangement of the images as you feel they reflect your sun and shadow selves. When you have finished the mandala, write two sentences: a sun-sentence, using all of your sun words, and a shadow-sentence, using all of your shadow words. Write these sentences around the outside of your mandala.

The Sun-Shadow Mandala (see Appendix pp. 58-65) involves students in a highly integrated activity that uses right-hemisphere functions such as drawing, coloring, and designing as well as left-hemisphere functions such as logical progression of idea and sentence creation. The sentence-creation aspect of the mandala assignment may be a separate exercise in constructing

the cumulative sentence or it may be a purely open activity. Both methods result in fanciful ideas and unusual conjunctions of thought.

Over the last few years, I have collected mandalas made by children and adults of all ages. Teachers have used the assignment as outlined above or modified it, perhaps using four elements rather than seven for younger children. After doing personal mandalas, students can apply the same process to sun-shadow mandalas for characters in books they are reading; this activity has led to character studies that are rich and imaginative, filled with the imagery of the mandalas to describe character motivation and change (see Appendix, pp. 66-68). After analyzing hundreds of sun-shadow mandalas, I have observed a nearly constant correlation between the degree of integration of symbols in the mandala and the students' abilities to organize and develop ideas in writing. Following the same students in their abilities to integrate elements has revealed a corresponding growth, in each case, in the development in the mandala preceding the development in writing.

The Universe of Language Mandala

The Universe of Language Mandala grew out of a series of workshops that poet and playwright Michael McClure gave to a group of high school students through the California Poets-in-the-Schools program. The process of generating the words is such a valuable exercise in helping students understand the difference between concrete and abstract words that many teachers, from grade four to college, have experimented with this mandala exercise.

First, the rules: I tell the students that they are going to create a universe of words, a personal universe composed only of words that are important to them. They must limit this universe to one hundred words, selected as follows:

sixteen words for each of the five senses
ten action words in their simplest form
ten "free" words, one of which must be an abstract word; the other nine must be specific. This list may include place names, rejects from other lists, etc.

The challenge comes in the instruction that all of the sensory words and nine of the free words must be specific. At this point I read some poems that contain strong imagery, identifying the concrete words and which senses they evoke. It is a good time, too, I find, to introduce the thesaurus; I want students to find words that are right for them. All words on their lists should be important to them. The words may be important because of memories, of sound, of simplicity, or of complexity. If they do not care about a word, they should reject it.

The process of generating word lists may become the focus for several class periods as students become absorbed in words. During these days I am very busy working with students, checking words to see whether they are concrete. If a student wants the word "red," for example, I ask her to think of

the one thing that is most red; the answer might be "tomato," "apple," or "rose." Whatever the answer, that word becomes the word on the list; "red" is an abstraction and cannot be used unless it is the single chosen abstraction. Selecting that one word can provide a good exercise in arranging values in the order of greatest importance.

After the lists are generated, I ask the students to pattern their words into a mandala: any design that uses all one hundred words, has a focus, and reflects their sense of color and shape. Frequently the single abstraction becomes the focus for their mandalas, but sometimes the focus is one of the action words or simply a favorite word. Younger students often construct a graphic image of their focus word, working each work into a picture, somewhat in the nature of a concrete poem. The mandalas of older students are more likely to be abstract in design with a hint of picture or idea in their arrangements of words (see Appendix, p. 69).

Once the universe of language mandalas are on the bulletin board, they constitute a composite verbal mandala of the class. The words themselves become part of each student's folder and are often used in writing assignments. As students work with language, they find that words from this assignment appear with amazing frequency in their writing. Some teachers have compared mandalas done at the beginning of the school year with those done at the end and asked students to write a final piece trying to explain how the two lists of words reveal their own changes during the year. As the students explain why one word was dropped and another added, they can see their own universes changing and reforming.

These two mandala assignments are suggested here as touchstones for teachers to use in developing their own ideas for involving students in right-hemisphere activities that include such components as color and design, metaphorical thinking that allows images to be joined in unusual ways, and the circle as a basic integrating form. The mandala assignments aid students in the process of image-making, a primary function in the act of writing that, at its highest levels, turns writing into an art. Combined with the left-hemisphere skills of explaining and defending choices, making value judgments, and constructing meaningful sentences out of images, the mandala assignments provide for learning with both sides of the brain.

The Paper is Whiter for These Black Lines

For centuries, artists have learned their craft by close modeling of an original work of art. I used to wonder why art students wasted their time imitating when they could be creating. What I did not see was that I myself was slavishly imitating first one poet (cummings) then another (Dickinson) as I "created" my own poems. What I see now, however, is that by imitating established writers (I remember writing an entire college essay in prose that staggered after Thomas Wolfe), I internalized options of style and form and developed a voice of my own as more options became part of my stored

(right-hemisphere) memory. Robert Duncan discusses his own poetics as "derivative," a concept that can be extremely useful to writing teachers.[26]

It has even been suggested that imitating form may help a writer generate richer content. Frank O'Hare speculated on this possibility while doing research on the effects of sentence-combining practice on student compositions:

> In *Notes Toward a New Rhetoric* (1967) Christensen raised an interesting point that may help to explain something that the present researcher noticed in an entirely subjective examination of the post-treatment compositions. Christensen claimed that "solving the problem of *how to say* helps solve the problem of *what to say*..." (p. 5). Does this mean that form can, in some sense, generate content? It was evident to this researcher that the post-treatment compositions written by the experimental group had much more detail, more "meat" to them. The treatment group seemed to "see" more clearly. They had more to say. Perhaps the syntactic manipulative skill the students had developed, because it entailed a wider practical set of syntactic alternatives, *invited* or *attracted* detail. Perhaps knowing *how* does help to create *what*.[27]

Modeling may take many forms, from sentence combining, to word-for-word substitution, to pattern modeling of whole structures. Varieties are endless, but the basic element lies in presenting students with a model and defining the specific form of patterning that they are to imitate. These assignments, I believe, enable students to internalize patterns, committing to memory shapes perceived by the right hemisphere. If students move from simple to complex patterning, they acquire the ability to use any of the structures they have modeled as options in their own writing. The process of transference seems to operate largely on a subliminal level; most of my students are not aware of selecting sentence patterns that they have modeled. Their writing, however, is much richer after these exercises, and it is interesting for them to look at their earlier writing (all kept in a classroom folder) and note the increased use of the varied structures they now have available.

Suggestions for Modeling

1. Use the first line of a poem as the first line of an original piece of writing, poem or prose.
2. Block out the structure of a short essay or a poem and follow the organization of thought precisely.
3. Model closely (word for word) a few sentences or a paragraph from an essay or story. Follow this exercise with a few sentences in the same style.

4. Select two voices from a short story or novel and create a dialogue in their voices.
5. Write an additional section or rewrite the ending to a short story or novel. (This exercise requires close study of the original, perhaps by a word-for-word substitution).
6. Identify dreamlike elements in a poem or story and create a similar piece using dream images from your own dreams. (Having students keep dream logs provides a rich right-hemisphere source for this exercise.

Any element can be isolated for modeling. I have used image, symbol, tone, audience, point of view, and imposed form (sonnet, haiku, etc.) as well as sentence structure. The entire concept of sentence combining is based on modeling, and researchers have discovered that practice in sentence combining does, in fact, result in changes in student writing. What I notice is that students have internalized the options (a right-hemisphere function) and use these options both in first draft writing and in revision. The process of modeling also teaches students what *style* is and enables them to discuss different authors' literary styles with a degree of sophistication that signifies understanding. As students demonstrate their understanding of an author's style by writing a close imitation, I see the integration of the right-hemisphere function of spatial arrangement of idea with the left-hemisphere function of logical sequence of meaning.

There is a Sense in Sounds Beyond Their Meaning

The interrelationship of form and content seems to me to be at the heart of any discussion of the teaching of writing. While it is an oversimplification to equate form with right-hemisphere perception and content with left-hemisphere understanding, the equation does serve as a metaphor for this paper. Through techniques such as clustering, mandala patterning, and modeling, we can involve both the linear, sequential processes of left-hemisphere thinking and the holistic, spatial processes of right-hemisphere thinking. We can teach students how to organize content by helping them see the shape of their writing. We can create forms that will generate content. By involving students in pre-writing activities that allow for the image-making process of the right-hemisphere, we can ensure finished pieces of writing that have layers of complexity or striking conjunctions of thought. By introducing them to the patterns of thought of the masters, we can increase options available in their own writing.

IV

Conclusion

In coming full circle by ending as we began, we reproduce the following student cluster and resulting paragraph on clustering which highlights, in its own metaphoric way, something of the importance of involving right-hemisphere activities in the teaching of composition. It tells us not only something of the difficulties of writing but also something of the satisfactions that accrue when we, as teachers, give our students writing tools and writing assignments which encourage balancing the two hemispheres of the brain:

Clustering helps make writing for me more like taking a picture. It gives me the opportunity to see the whole before trying to tackle a part, or to see a part before trying to tackle the whole.

When I first started school, the idea of having to write was frightening. Now I look forward to writing and do it more and more. I still have a lot of mechanical problems, but I enjoy writing, and putting thoughts on paper helps to clarify them in my mind.

In the beginning of this semester, I'd sit down at my desk, take a sheet of paper, and proceed to think up sentences one at a time, write them down, turn them into paragraphs, re-read them, and discover they had no flow of thought. What was I trying to say? How was I to organize my thoughts so they made sense? I was having a lot of trouble, and frustrations built inside.

Clustering didn't relieve all those frustrations. Whenever I write or try to solve any problem of any kind, I experience a lot of frustration: that's merely part of the process. But clustering helps me see the light at the end of the tunnel, the pot of gold at the end of the rainbow. Once I see the end—the point or main focus—I know better what to put in the middle and beginning to provide an even flow of thoughts.

Believing that I will always take pictures in order to see better and express those sights, so will I always cluster to write better.

Notes

[1]"Reversals: Dyslexic Tells of Trauma, Trials, Triumph," *Brain/Mind Bulletin*, 4, 19 (August 20, 1979), p. 4.

[2]Norman Geschwind, "Specializations of the Human Brain," *Scientific American*, September, 1979, p. 241.

[3]Eran Zaidel, "Concepts of Cerebral Dominance in the Split Brain," in *Cerebral Correlates*, ed. by P. Buser and A. Rongeuel-Buser (Amsterdam: Elsevier, 1978), p. 264.

[4]*The Language of Change* (New York: Basic Books, 1978), p. 22.

[5]Personal correspondence, 1978.

[6]Rosalie Cohen, "Conceptual Styles, Culture Conflict, and Non-Verbal Tests of Intelligence," *American Anthropologist*, 71, (1969), p. 834.

[7]Eran Zaidel, "The Elusive Right Hemisphere of the Brain," *Engineering and Science*, XLII, 1, (September-October, 1978), p. 11.

[8]Watzlawick, *The Language of Change*, p. 23.

[9]*Ibid.*, p. 66.

[10]Zaidel, "The Elusive Right Hemisphere," p. 32.

[11]*Homochronos: Evolution and Development of Consciousness*, (unpublished, 1979), p. iii.

[12]*Of Other Worlds*, Harvest Books (New York: Harcourt Brace Jovanovich, 1966), p. 42.

[13]Howard E. Gruber, "Darwin's 'Tree of Nature' and Other Images of Wide Scope," in *On Aesthetics in Science*, ed. by Judith Wechsler (Cambridge, Mass.: MIT Press, 1978), p. 127.

[14]"Letter to Jaques Hadamard," in *The Creative Process: A Symposium*, ed. by Brewster Ghiselin (Berkeley and Los Angeles: University of California Press, 1954), pp. 32-33.

[15]"The Year of Dr. Einstein," *Time*, February 19, 1979, p. 76.

[16]Cited by Carl F. Schreiber, "Introduction to *Faust*," in Johann Wolfgang von Goethe, *Faust* (New York: Heritage Press, 1959), p. ix.

[17]"Why I Write," in *Eight Modern Essayists*, ed. by William Smart (New York: St. Martin's Press, 1980), p. 336.

[18]*Ibid.*, p. 338.

[19]Dale Singer, "Best Toys are Simple Ones," *St. Louis Post-Dispatch*, December 3, 1976, p. 5D.

[20]Speech delivered at San Jose State University, San Jose, California, April, 1978.

[21]"Creative Arts and Academic Performance," *Dromenon: Journal of New Ways of Being*, 1, 5-6 (February, 1979), p. 4.

[22]"The Biological Basis of Imagination," in Ghiselin, *The Creative Process*, p. 258.

[23]James Britton, *et al.*, *The Development of Writing Abilities (11-18)* (London: Macmillan Education, 1975), pp. 81ff.

[24]Carl G. Jung, *et al.*, *Man and his Symbols* (Garden City, New York: Doubleday, 1964), pp. 213-217.

[25]*Analyzing Children's Art* (Palo Alto: Mayfield, 1969), pp. 64-69.

[26]See *Derivations: Selected Poems 1950-1956* (London: Fulcrum Press, 1968).

[27]*Sentence Combining: Improving Student Writing without Formal Grammar Instruction* (Urbana, Illinois: National Council of Teachers of English, 1973), p. 72.

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also see:

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Appendix

Models for Constructing Frameworks for the Writing Curriculum

Model I: Framework by Grade Level
Model II: Framework by Specific Assignment

Sample Clusters, Maps, and Related Writings

Sample Mandalas

Modeling

John Hanna
Grade 12
Alameda High School

Models for Constructing Frameworks for the Writing Curriculum

Model I, Framework by Grade Level, is designed to insure attention to each of the three kinds of writing—expressive, poetic, and transactional—to the importance of pre-writing activities, and to the mode of learning involved in the activity—right-hemisphere, left-hemisphere, or integrated.

MODEL I
SUGGESTED MODEL FOR CONSTRUCTING FRAMEWORK FOR WRITING CURRICULUM:
GENERAL BY GRADE LEVEL

Grade Level	Kind of Writing	Frequency	Purpose	Audience	Pre-Writing	Revision	Mode of Learning
1	Expressive	Daily	Increase fluency	Peer Group	Cluster	Once a week	Integrated
	Poetic	Twice a week	Encourage sense of form (rhythm, shape, etc.)	Peer Group	Dancing Drawing Improvising	Occasionally	Integrated
	Transactional	Once a week	Develop ability to record observations	Peer Group, Teacher	Various	Occasionally	Integrated

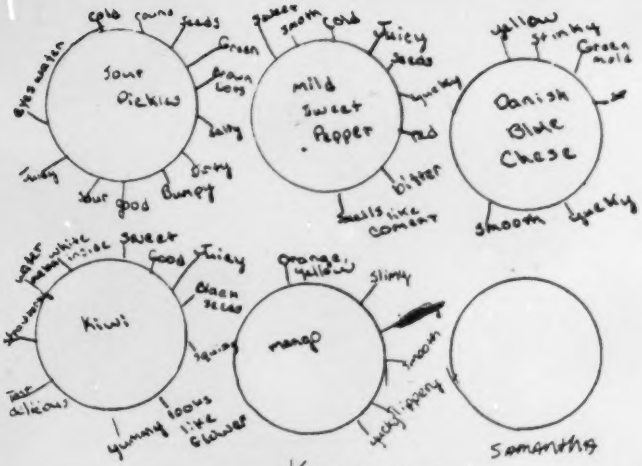
Along with the kinds of writing developed at each grade level, the curriculum should include readings of the types of writing that students are producing. A great amount of the reading should be the writing of other students.

Model II, Framework by Specific Assignment, is designed to cover the elements of Model I while also demonstrating the appropriate span of grade levels for specific assignments.

MODEL II
SUGGESTED MODEL FOR CONSTRUCTING FRAMEWORK FOR WRITING CURRICULUM WITH SPECIFIC ASSIGNMENTS

Writing Assignment	Grades	Kind of Writing	Audience	Response	Pre-Writing Activities	Editing or Revising	Mode of Learning	Evaluation
Focused Free Writing	1-6	Expressive	Self, peers, teacher	Occasional written from teacher, oral from small peer group	Cluster	None	Integrated	Credit for completion of assigned writings in folder
20 Minute Sustained Writing on Assigned Topic	4-6	Expressive or Transactional	Small group, teacher	Group discussion, Teacher evaluation	Cluster	None	Integrated	Holistic scoring
Class Log Entry	3-6	Transactional	Small group, teacher	Group discussion, Teacher comment	Various (drawing, clustering)	None	Integrated	Credit for completion
Sun-Shadow Mandala with Sentences	4-6	Poetic	Class	Class (board)	Drawing	Editing by peers and teacher	Integrated	Credit for completion; evaluation by teacher for development of integrative skills

Sample Clusters, Maps, and Related Writings



KIWI

Kiwi tastes like a strawberry and it smells like water melon. It is good, too, and it is squishy and has black seeds inside. It looks like a flower when you cut it in half. Its juicy and very delicious and outside it looks like a little avocado and the kiwi is rough on the outside.

Cauli flower

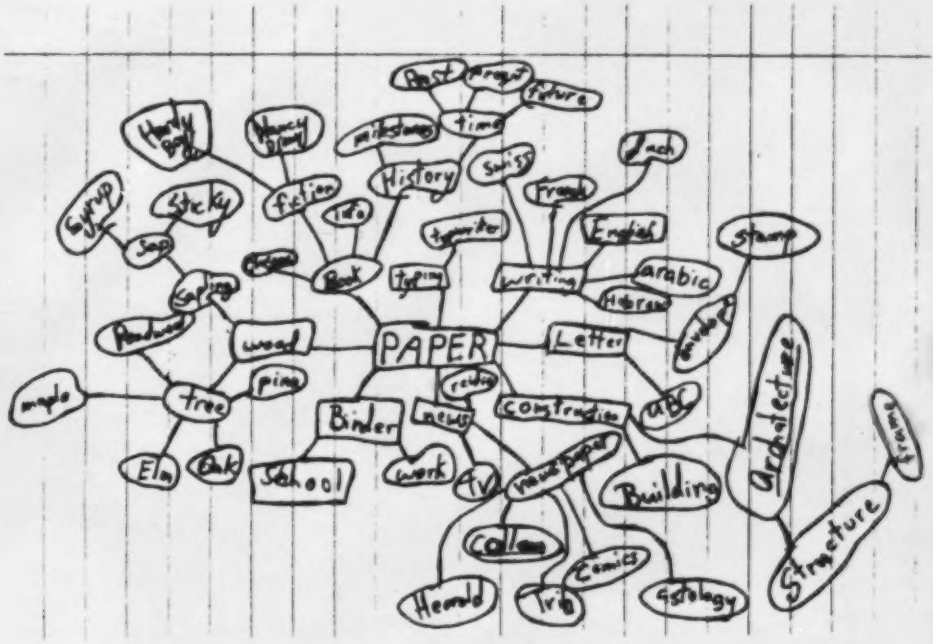
Cauli flower looks like a little apple tree and it is very very Good. And it is white. And it goes with a lot of things. And it remines me of thunder clouds.

By Samantha Heilig

For the above piece, children tasted a variety of foods, clustered them, then selected one to write about.

Samantha Heilig, Grade 2
Haight School, Alameda, California
Teacher, Susan McAllister

In the following two items, children clustered a single word, then wrote whatever they felt like writing for a period of ten minutes. This process became a daily activity. (See text)



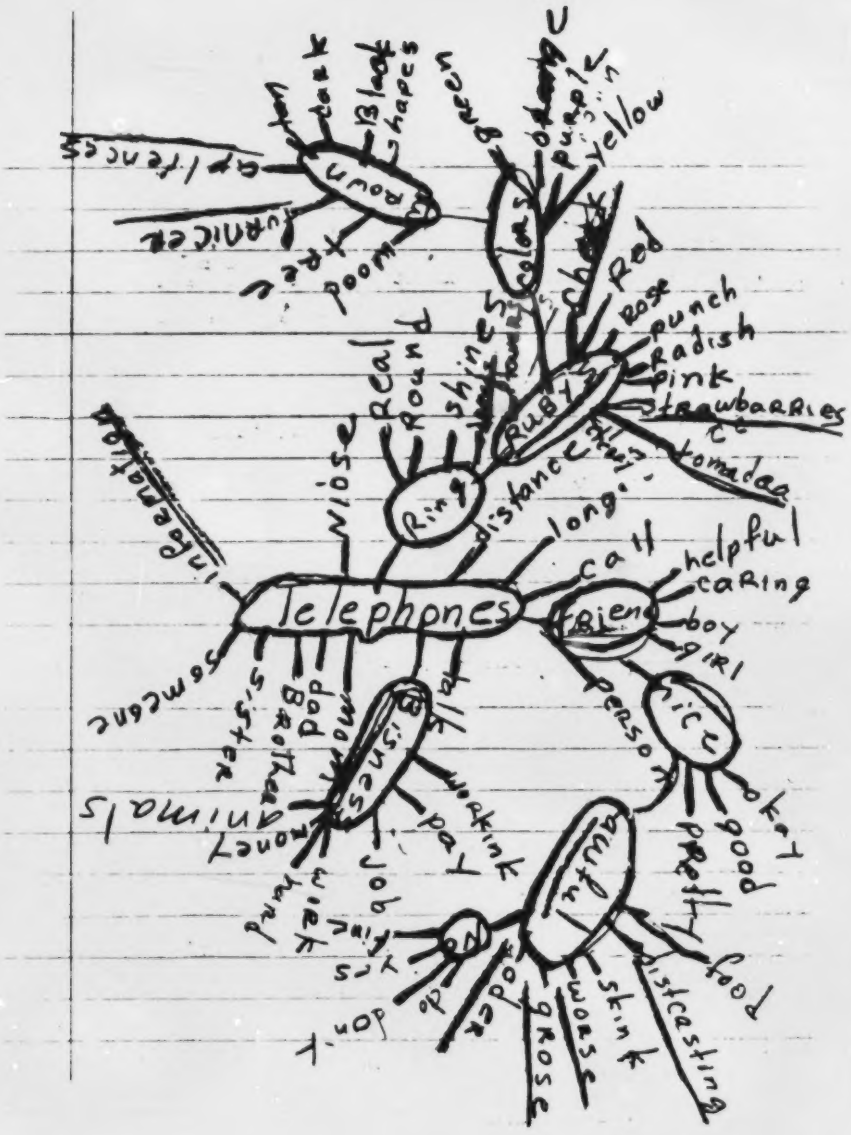
"Paper"
Sean Williams, Grade 5
Cristensen School, Livermore, California
Teacher, Nancy Briemle

Writing based on Sean's cluster.

Paper

Paper is made from wood which in turn is made from trees. Which also gives us syrup, plywood and other fine materials. Paper is one of them, paper brings us news art and letters from back home. From paper comes books which contains knowledge, fantisy, how to and the great imagination in the corner of an authors eye. Paper tells history marks millstones and make stamps which go on paper envelopes. Paper is used in ~~excatchers~~ art, newspapers, work, school, Typing, newscasting, communications, the library your reading, and many many more places.

Paper truly is a necessity without it the world would slow down.

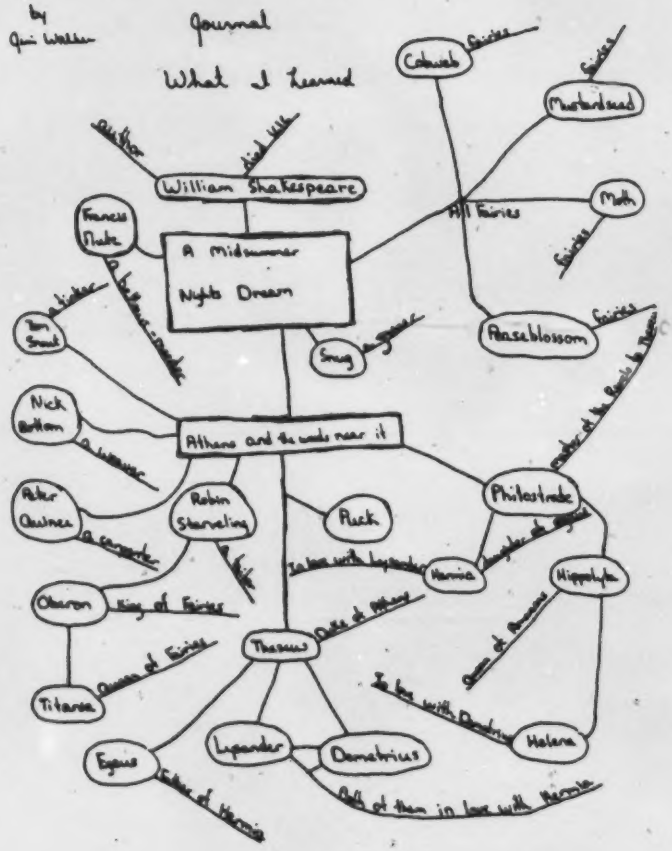


"My Circus"
Andrea Garcia, Grade 5
Christensen School, Livermore, California
Teacher, Nancy Briemle

Writing based on Andrea's cluster.

(By: Andrea) My Circus

The thing I have clustered is a big circus. My main word is telephones, because, telephones was the only one which I could have clustered almost all the things in a circus. In the circus it has Red, green, pink, tan, Black, orange, purple, and yellow. We are a long distance from Livermore. But we also have animals, roses, punch, strawberries, cherries, tomadoes, radishes, ect. The rides are mostly made of wood. We also have ~~my~~ jobs, with good pays, if you need a job or want one. But one thing about the rides ~~are~~ is that, sometimes it can be really awful. If you need some more information, call, 416-8810. I do ~~admit~~ that, some of the jobs ~~may~~ might be hard. Please come.



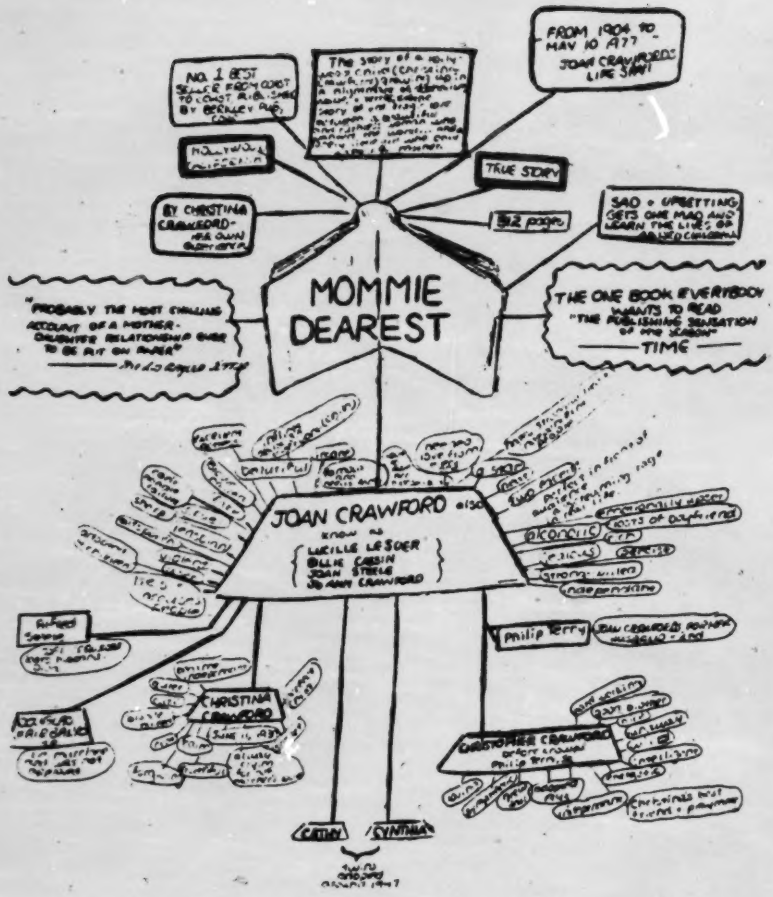
Map of Shakespeare's *A Midsummer Night's Dream* assigned to help student see the relationship of groups of characters to sub-themes.

Jim Walker, Grade 9
Alameda High School, Alameda, California
Teacher, Elouise Graf

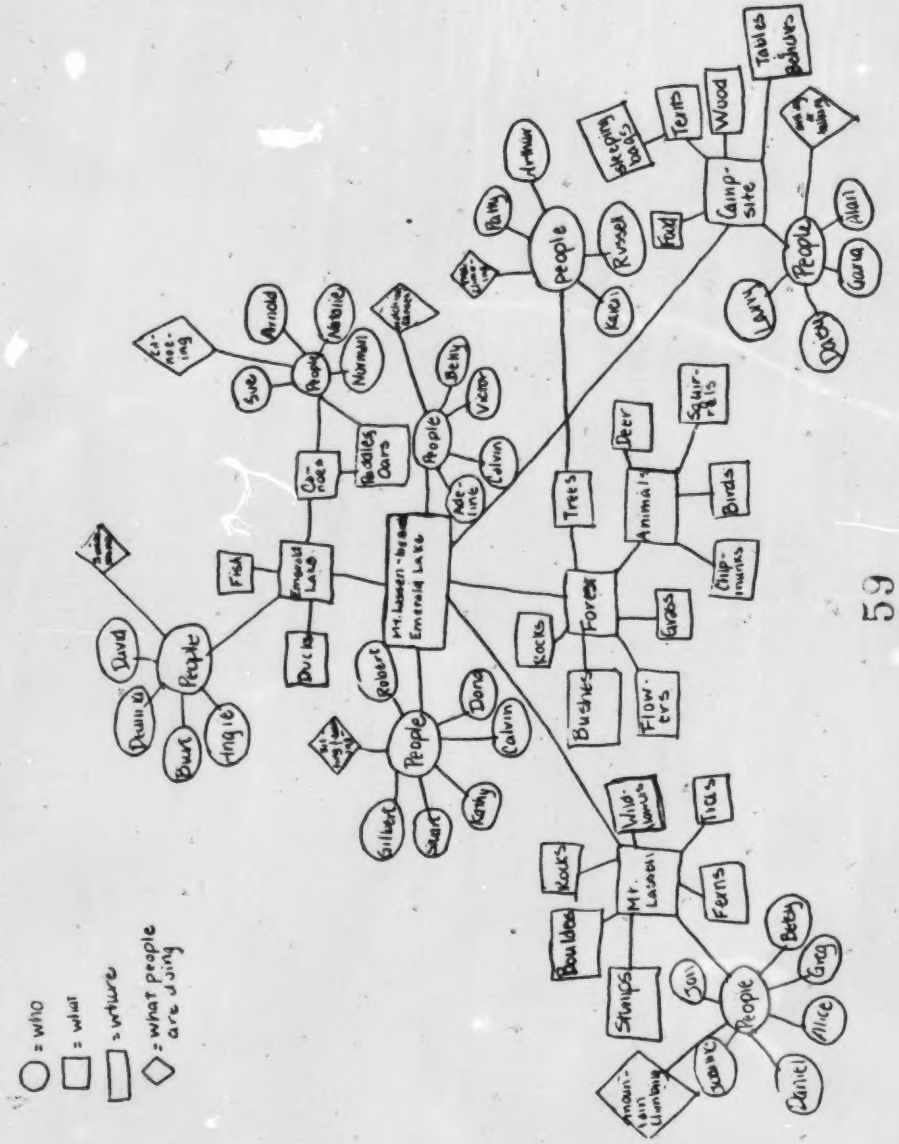
(Note: A *map*, as distinguished from a *cluster*, is a graphic presentation of ideas *organized* in some way through the use of design, placement, color, etc.—MFC)

Map of *Great Expectations* by Charles Dickens drawn in preparation for writing an essay on the novel.

Siobhan Mihara, Grade 9
Alameda High School, Alameda, California
Teacher, Elouise Graf

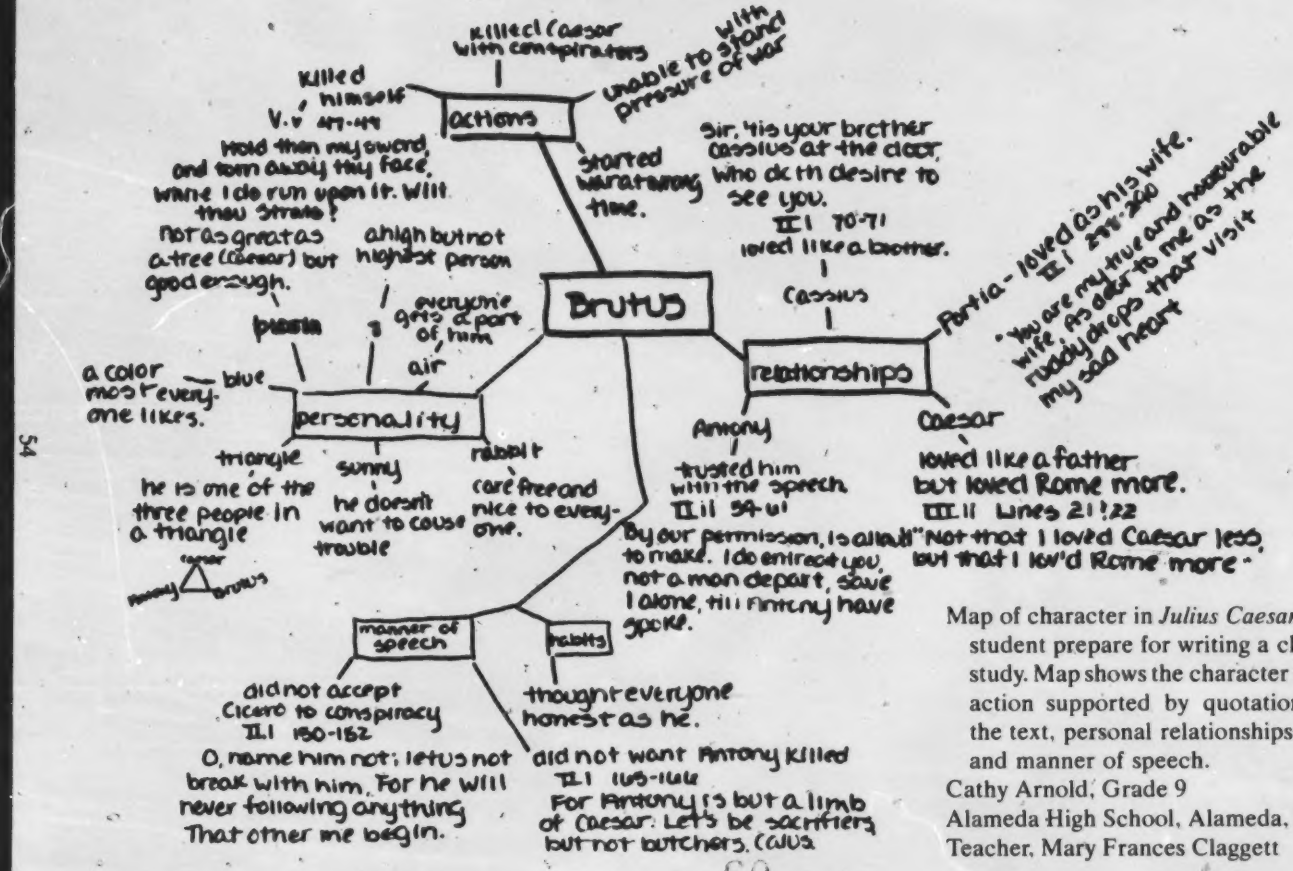


Book Report Map on *Mommie Dearest* by Christina Crawford
Deborah Alexander, Grade 9
Alameda High School, Alameda, California
Teacher, Elouise Graf



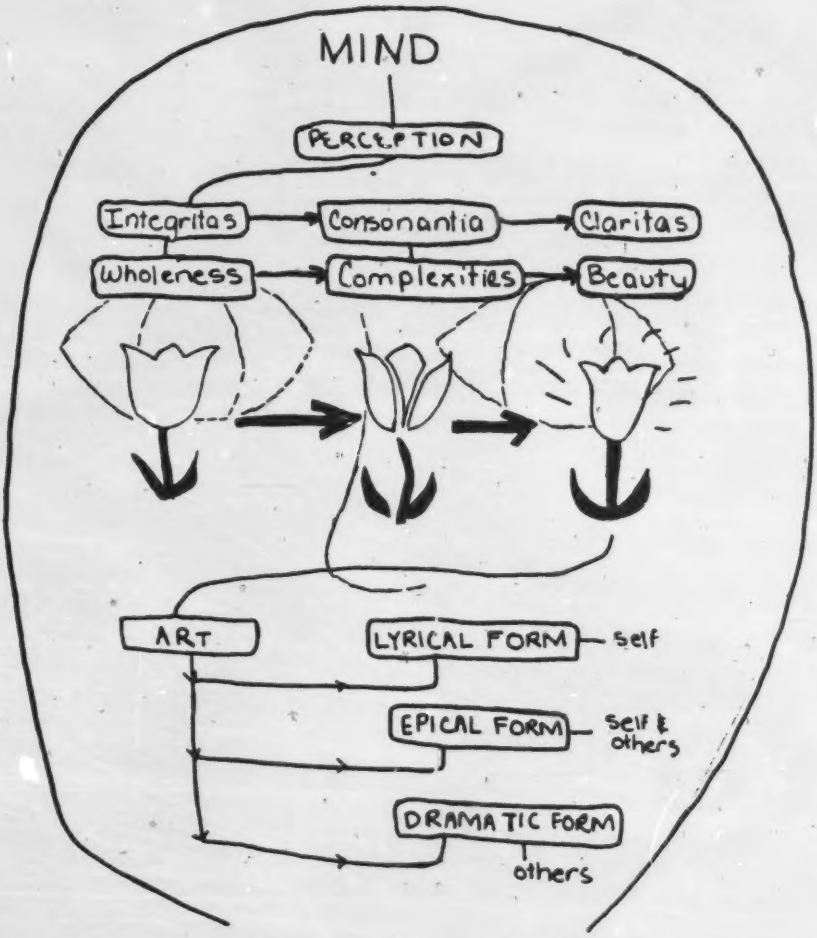
Map drawn in preparation for writing an essay in which the student attempts to describe a favorite place to a blind girl.

Shirley Siu, Grade 9
Alameda High School, Alameda, California
Teacher, Elouise Graf


Brutus
actions
Killed Caesar with conspirators
unable to stand pressure of war
Killed himself V.v 47-49
Hold then my sword, and turn away thy face, While I do run upon it. Will thou, Strato?
started war at wrong time.
personality
Portia
not as great as a tree (Caesar) but good enough.
a high but not highest person
everyone gets a part of him
air
a color most every one likes.
blue
triangle
he is one of the three people in a triangle
sunny
he doesn't want to cause trouble
rabbit
care free and nice to everyone.
relationships
Cassius
Sir, 'tis your brother Cassius at the door, Who doth desire to see you.
III 1 70-71
loved like a brother.
Portia - loved as his wife.
II 1 298-300
"You are my true and honourable wife, As dear to me as the ruddy drops that visit my sad heart
Antony
trusted him with the speech.
III ii 59-61
By our permission, is all'd" Not that I loved Caesar less, but that I lov'd Rome more"
Caesar
loved like a father but loved Rome more.
III ii Lines 21-22
manner of speech
habits
did not accept Cicero to conspiracy
II 1 150-152
O, name him not; let us not break with him. For he will never following anything That other men begin.
did not want Antony killed
II 1 165-166
For Antony is but a limb of Caesar. Let's be sacrificers, but not butchers, Caius
thought everyone honest as he.

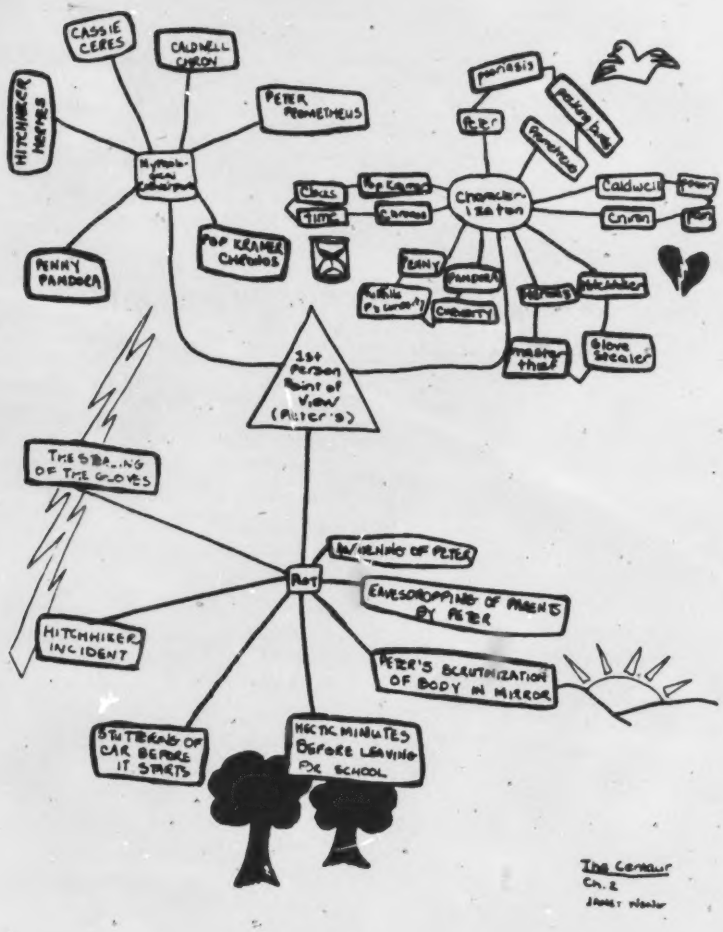
Map of character in *Julius Caesar* to help student prepare for writing a character study. Map shows the character through action supported by quotations from the text, personal relationships, habits, and manner of speech.

Cathy Arnold, Grade 9
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett



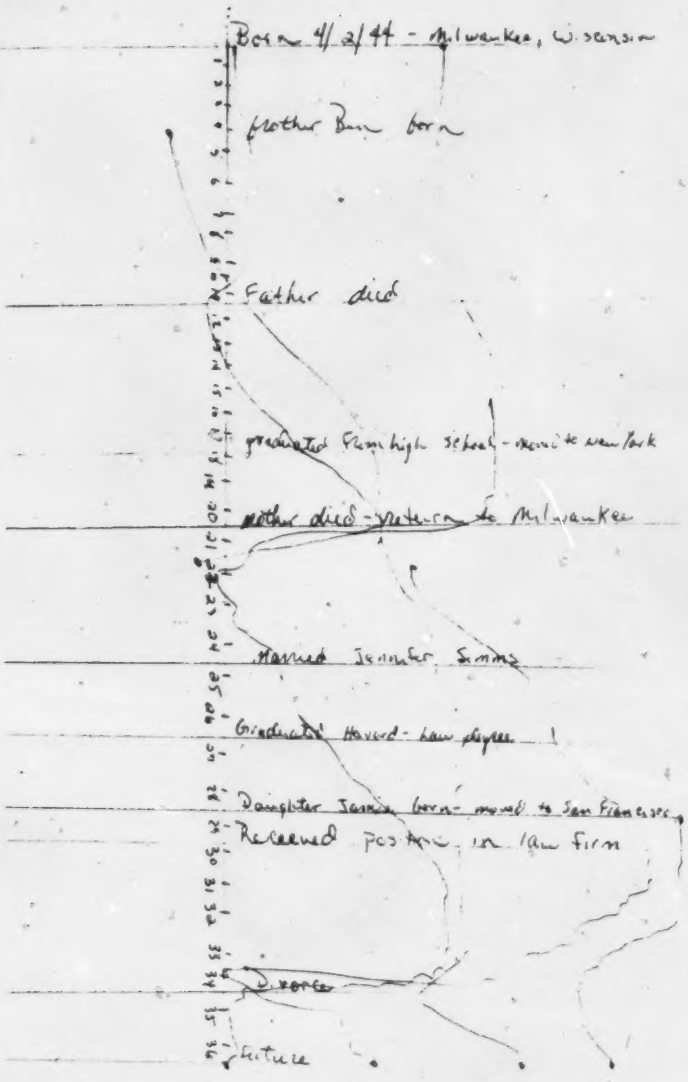
Map depicting the aesthetic theory described by Stephen Daedalus in *A Portrait of the Artist as a Young Man* by James Joyce.

Janet Wong, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett



Map of Chapter 2 of *The Centaur* by John Updike.
Map is intended to be a graphic portrayal of the formalistic elements of the chapter.

Janet Wong, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett


Born 4/2/44 - Milwaukee, Wisconsin
Father died
graduated from high school - moved to New York
mother died - returned to Milwaukee
Married Jennifer Simms
Graduated Harvard - law degree
Daughter Jessica born - moved to San Francisco
Received position in law firm
Divorced
future

"Lifeline" map of student's projected character for a short story. After constructing the lifeline, the student focused on a crisis as the primary element of the story, using the other incidents as background information for the author.

Kathy Sabo, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Sun-Shadow Mandala

Lisa Gunn, Grade 6
Holbrook Elementary School, Concord, California
Teacher, Marvin Jacobs

Writing integrating the elements of both the sun and the shadow parts of Lisa's mandala.

Mandala

Long ago there lived a cat who lived right under a tree in the middle of a giant forest. In this tree there lived an owl who for some odd reason always come down every night and made loud noises right next to the sleeping cat. The cat got very angry every night because he couldn't sleep.

One night when the owl came down to keep the cat awake, the cat had planed ahead, The cat had gotten some of his friends to come and wait for the owl, so when the owl came down all these other cats came out of their hiding places and attacked the owl. The owl flew away very angry at the cat.

Ever since then the cat and owl have been enemys and every thing the cat liked the owl liked the opposite.

Sun-Shadow Mandala

Kim Rossi, Grade 6
Holbrook Elementary School, Concord, California
Teacher, Marvin Jacobs

Writing based on Kim's mandala.

Sun

There once lived a Koala Bear who was very quite and he always watched over the country to make sure it stays a peace place to go and have fun. everyone called him the peace bear. When people went to the beach he watched them play in the water and on the beach. The number 10 stands for that he is the tenth one left.

moon

There once lived a dog + who watched the land. He was a mean dog and the place he lived was quiet and no people visited there it was black and gloomy. Any body who came up to him he snarled at the people and scared them away and they never came back agin. He roamed all around the grey mountains, and it was cold and icy there is very much skunk cabbage growing around. The numbe 9 is for he is the last of the nine dogs who were before him.

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PERSONAL MANDALA

Work Chart

	MOST LIKE	= ADJECTIVE DESCRIBING	OPPOSITE ADJECTIVE	= WHAT FITS
ANIMAL	Tiger	Loud	quiet	mouse
PLANT	spider Plant	Long-hanny	stubby	cactus
COLOR	blue	watery	dry	sand tan
NUMBER	14	even	odd	117
SHAPE	rectangle	tall	short	square
WEATHER	sunny	cheerful	sad	stormy
ELEMENT	Fire	hot	ice	cold

Sun-Shadow Mandala with worksheet

Joey de Franco, Grade 5
Haight School, Alameda, California
Writing Instructor, Susan McAllister

A HYENA LAUGHED AS HE ATE HIS RED HAMBURGER UNDER THE WEIRD BINGO TREE. IT WAS A SUNNY DAY AS THE RASCET HOUND SAT ON HIS 13 SQUARES UNDER THE SHADE OF A DUSTY SUNFLOWER ON THE 7TH PARTLY CLOUDY DAY
SUN
HA! HA!
7
RED!
13
GRAY
SHADOW

Sun-Shadow Mandala

Barbara Garner, Grade 7
Del Mar Intermediate School, Tiburon, California
Teacher, Cathy Schengel

Sun-Shadow Mandala

Darci Bauer, Grade 11
Alameda High School, Alameda, California
Teacher, Judy Thompson

Sun-Shadow Mandala

Laurie Williams
Teacher Training Workshop
University of California, Berkeley

Sun-Shadow Mandala based on *Antigone* by Sophocles
Renée Sanders, Grade 11
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett.

Poem integrating the sun elements of Renée's mandala on *Antigone*.

NOT EVEN HER OWN DEATH

Antigone, a young tawny lioness,
inexperienced, yet full of strength.
Like a young sapling, bending but springing back;
the branches her defense, keeping all at a distance.
Her will unwavering, alone in her task.
Her spirit, the image of a spring day,
vibrant and strong, forceful as the north winds.
Pure and unyielding, her determination the reflection
of a waterfall, letting nothing stop her in her quest
to keep her promise to Polyneices.

Renée Sanders

In the following passage, an extract from an eight page character study of Brutus, the author focuses on the element of water as a way of helping to define Brutus' nature. He has dealt with each of the sun-shadow elements as he portrays Brutus in relationship with others and in action in the play.

"(Brutus' idealism) can be best illustrated by the reference to that powerful, awe-inspiring element of water, for through the honesty of Brutus, his idealism as well as trust caused him to flow as would the liquid in the hands of Cassius, to bend in the grasp of the will of the scheming conspirator.... Like water, which could be raised to the climactical extent of torrentous rage, as a river in the midst of thundering downpour, no longer conforming to the mold laid by others, but carving its own path...is Brutus also; for when his sheer terror of honesty became dominant with the idealistic visions of perfection, he parallels a crashing flood, in that Cassius could but be swept into consent for his actions....

"With Antony, the trait of water as a dominating force making its own way is not apparent in Brutus' brief and tragic encounters with Antony throughout the play. The opportunist in Antony, however, drove him to take as great an advantage of Brutus' other characteristic of water—his ability to conform and flow. Thus Antony molded the situation and Brutus in accordance to the scene where he would 'move the stones of Rome to rise and mutiny.'"

Michael Chen, Grade 9
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Universe of Language Mandala

A graphic representation of the student's list of one hundred words (see text, pp. 30-31).

David Tom, Grade 8
Martin Luther King Junior High School, Berkeley, California
Teacher, Rory Bled

Modeling

Close Modeling of George Barker's sonnet "To My Mother." In this assignment, students attempt to write a word-for-word emulation of the original, using their own subject matter.

TO MY MOTHER

Most near, most dear, most loved and most far,
Under the window where I often found her
Sitting as huge as Asia, seismic with laughter,
Gin and chicken helpless in her Irish hand,
Irresistible as Rabelais, but most tender for
The lame dogs and hurt birds that surround her,—
She is a procession no one can follow after
But be like a little dog following a brass band.

She will not glance up at the bomber, or condescend
To drop her gin and scuttle to a cellar,
But lean on the mahogany table like a mountain
Whom only faith can move, and so I send
O all my faith, and all my love to tell her
That she will move from mourning into morning.

George Barker

TO MY "SISTER"

So close, so helpful, so handy, and so far away,
In the harbor where I go to her for comfort,
Resting; as vast as the Bay, resolute with age,
Boys and men, both, captive in her delightful wonders,
Irresistible as Stevenson, but providing shelter for
The unloved hawks, and the doves of broken homes who worship her,
—She is a sibling of mine which I never had
But be like a small child running after the ice cream truck.

She will not visibly worry about funds, fuel, food and Friends, nor concede
To lose her crew and sink down to Davy Jones's Locker,
But, rather, hang on to the Council as if it were a carrier
Which only war or peace can move, and so I deliver unto her
A message: Pax vobiscum, and all of my loyalty to inform her
That she shall drift from sunset into sunrise.

Robert Krikourian, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

TO MY LOVE

Most true, most real, most wanted and most deceiving,
Deep in the soul where I often harbor you,
Sinking as hopelessly as the Andrea Dorea, echoing with cries,
Pride and humility helpless in the overwhelming emotion,
Solid as Apenine marble, but most vulnerable for
The romantic dream and growing infatuation that accompany you,—
You are a craving no one can deny
But be like an aching hunger filling an empty soul.

You will not melt away at the end, or fade
To weaken your hold and wither to a feeble feeling,
But spread throughout the flooded soul like a venom
Which only self-control can counteract, and so I search
O, for common sense, and enough will-power to stop you
From over-ruling and becoming me.

Toni Nicosia, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Structural Modeling of a short essay, "Fieldnotes on the Hummingbird." In this assignment, students are to follow the structural outline of the original, keeping to the pattern but not following it word for word.

FIELDNOTES ON THE HUMMINGBIRD

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The New Yorker Magazine, Inc.)

These field notes have come in from a bird-watcher on Martha's Vineyard: "The hummingbird builds her nest of cinnamon ferns and spider webs, shingled with lichens to resemble a small gnarl on a pine branch.	**Fieldnote language; close observation**
Miraculously, we've spotted one just at eye level beside the dirt road that leads to the place we've rented here.	**Interjection of personal reference; foreshadowing in "rented."**
Two white eggs, smaller than lima beans, have hatched, and the mother is whirring here and there faster than ever. (What a metabolism in those intense, short-lived, beautiful little beings!) For nectar, she has jewelweed, trumpet vine, and loose-strife flowering in the area; I have been told that she provides a slurry of bugs for her young. Mostly beak at this stage, they wait for her, motionless in the nest. And yet they'll be flying themselves within a week, and the migration schedule is such that they won't be found at all by mid-September.	**Fieldnote language; close observation. Description by metaphor.**
Of course, we won't be here to look for them. The summer always passes too rapidly, and I have been thinking that a *vacation,* with its concentration of compelling impressions, *can become a disquieting metaphor* for mortality itself. When it's half gone, if the weather has been good and there have been no accidents, you think you'll still have ample time for everything you want to do. But then, suddenly, even though you haven't stopped enjoying yourself, you have to face the fact that in a limited number of days this period of freedom will be at an end.	**Transition** **Governing metaphor**
We've taken a picture of the hummingbird at work, but her wings beat maybe eighty times a second, and I had to warn the kids that even through we use the fastest shutter speed on our camera, there is sure to be a blur.	**Synthesis of fieldnotes and personal observations. Implicit extension of metaphor.**

Close Modeling:

FIELD NOTES ON A SWAN

Our swan has snowy white feathers and a long graceful neck. A mysterious black bulge emerging from between her eyes seems to flow over the top of a dirty yellow-orange bill. Small tufts of gray down peek out from among her layered tail feathers. The most obvious difference in coloring, however, is visible around the neck. Only people like myself, who live along the estuary, know that the black markings which begin just below the beak line are motor oil residue. Our swan, the only swan that lives along the estuary, lives a very lonely existence. The ducks are all frightened of her I would guess, because I often observe them flying away or hiding when she comes around my home. The other wildlife seem to ignore her, not even looking up when her full body skims the water's surface. In the last couple of months our swan has found comfort in the gasoline-sparked warmth of a small ski boat motor. Loneliness can drive anyone to very odd behavior. When I am alone and need a friend, I get a very sick feeling in my stomach, and being prone toward crying, the tears usually come. Alone and hysterical, I walk across town to where a very close friend of mine used to live and just stare at his house. Strangely enough, I usually feel better there; something very warm and secure is stirred deep inside of me—old memories perhaps. It is a false satisfaction, unfortunately, and the comfort of the moments near the house soon fades into embarrassment. The oil stains on our swan's neck are not permanent and with time, her infatuation with the motor is over, they will fade.

Jill Guthrie, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Loose Modeling:

FIELD NOTES ON A ROSE

These field notes were taken in spring by a daydreamer on Bay Farm Island: "The rosebuds face the sunlight, boosted by thorny stems. Layer upon layer, petals overlap each other, becoming one almond-like shape. One of the small red bulbs, speckled with white, turns black, infested with aphids. Its tattered and chewed petals will never open. The other bud sleeps untouched under the sun. Each day, two or three veiny petals loosen, unfurl, and stretch out, into the air. As the flower unfolds, it reveals shades of red, lavender, and finally the delicate pink of a young girl's unblemished cheeks. With each stage of a girl's maturity, one can observe her transformation into a woman. Losing baby-fat, stocky bodies become slender and blossom into proportion. As each month and year passes, her loveliness increases until it attains ultimate beauty. And then, middle age approaches. The youthful radiance of the woman fades quickly. I looked outside this morning to examine the rose in full bloom. The wind blew. With one gust, a rose petal floated soundlessly downwards, settling in brownish soil. A moment later, with another rushing breeze, three more petals fell lifelessly to the ground."

Toni Nicosia, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Topic Modeling of a poem, "Memoranda" by William Dickey. Students first clustered the word "scars," focusing on their own scars, scars they had inflicted or caused on other people, and finally on emotional scars. After clustering, they wrote a poem on some aspect of "scars," not attempting to emulate the Dickey poem.

MEMORANDA

The scars take us back to places we have been.

MATERIAL REMOVED DUE TO COPYRIGHT RESTRICTIONS

How much of me is already written down.

William Dickey

81

RIGHT NOW THEY'RE INVISIBLE

White hidden in whiteness,
like the famous picture of the white cow
eating marshmallows in a snow storm
that children talk about,
but when summer comes
and my skin begins to tan,
they will appear like secret messages
written in invisible ink by a Russian spy.

When I look at these three white blotches
shaped like the Great Lakes on my elbow,
I see myself standing
on tip-toe
struggling to reach the counter-top
that was then six inches
above my head.

I see my fingers
grasping for the cookies
placed purposely beyond my reach,
and instead catching hold of the cord,
and screaming as coffee grounds
and black pools of water splattered
and splashed, and my mother,
her make-up half on and her hair
in rollers, running in and
"Why can't you be more careful?
...like a bull in a china shop..."
Then she saw I was crying, and the blood,
and held my elbow under the faucet
letting the cool water wash over it,
apologizing over and over, and I cried
as I watched the red skin blister,
not knowing that the sun
would one day make me remember
how it felt to be small.

Jana Hunt, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

SCARS

This gloomy day brings memories of scars,
scars of my memories.
The day which almost ended my life,
the doctor left his mark.
The stitch lines
bring back that rainy day
my mother's face in horror
at my screams.
The red lights
flashing through my mind.
The white stretcher,
white uniforms,
tubes in my arms.
I remember no more,
but the scar
mars my stomach.
The physical scars of my life
are healed
to be laughed about
or to have something
for conversation.
Can I speak of my emotional scars?
Can I face them?
Can I heal them?
If I could see my heart, I know the
scars would be deep,
ugly, protruding, showing,
condemning me.
My family, my friends.
The beat gets louder
and louder
the scars open and close,
open and close.
They scream for
medicine.
They bleed for
healing.
The infection
grows,
overcomes me.
I think,
weep
for these hidden scars.

Margaret Mullens, Grade 11
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

STATES OF MIND

I. Rhode Island
White snow, blinding snow;
Kids laughing and playing.
Sledding faster, faster;
Tree, Crash, Blood.
Brave girl, lucky girl,
Twelve stiches on top of her head.

II. Florida
Big fights, frantic fights.
Kids crying and wondering.
Could it be us, was it us?
Arguing, yelling, slam!
It's OK mom, It's OK dad.
But it wasn't.

III. California
Loud mother-child quarrels.
"Why does she do this to me?"
"I hate her!"
Accusations, threats, smack!
It's not OK, but I'm fine,
Dad and I both are, here.

Melanie Anne Gauché, Grade 11
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

Modeling after close analysis of *Portrait of the Artist as a Young Man* by James Joyce.

These three pieces of writing are examples of the "portraits" that students distill from their reflexive journals (journals kept during the reading of the book as they reflect on their own epiphanies). These "portraits" each concern a childhood memory that remains fixed, like a photograph, and contains a significant insight for the author. Some of Joyce's stylistic devices have been internalized to the point of truly reflecting the authors' own voices.

REFLECTIONS ON A WINDOW-PANE

The child looked beyond, through the rain-mottled glass, to the dampened streets and sidewalks of this neighborhood. He tried to fix his eyes upon a gathering of puddles which were beginning to coalesce into a depression on the street. But through the glass, the outside world could only seem a magnificent jumbality of agitated shapes, dancing to the rhythm of the ubiquitous rain. The child paused. He turned to his mother, ironing:

"Mom, ca-an I go over to Mitchell's?"

"No you ca-ant. Can't you see it's raining?"

Of course I can see it's raining, the boy thought. That's why I want to get outside. There was something about the rain that strongly appealed to the boy. Was it the adventure of it, the easy discovery of a world changed, and changing still? Rain somehow signaled escape to the boy, as if he thought he could be carried away by the countless trickles and rivulets into the dark place where waters finally hid. Or perhaps the child was invigorated by the rain, and that which refreshed and sustained the grasses and trees somehow sustained him also?

The child flattened his nose against the pane, exhaling two ghosts which patiently began to vaporize. A boy appeared by the street, engulfed within his yellow raincoat. The boy noticed him and glared back, loosing a stifled sniff. Startled, the child turned again to his mother:

"Mom!"

"No!"

Tim Chin, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

"—It wasn't my fault, please don't blame me, for heaven's sake! We were only hungry—."

The stream was strewn with splinters of silver, twinkling as it flowed, and, like mother's breast, the earth was warm and soft under our bare feet.

"—Yes, I know! He was my best friend. Don't you think—."

There was a boy nicknamed 'pirate.' He was the most notorious boy in the whole village; his eyes were always filled with a little lively malice—and he liked me.

"—Of course I've been warned about it. But it hasn't happened for decades. How do you expect—."

Digging up arrowroots was fun; the labor always paid back. Sweet, bitter taste of arrowroots last long with the mild smell of the earth.

"—We found lots of 'em under the big oak tree. And then he—."

I was thrown away by a galvanic force as if I were hit by a giant. The stench of gunpowder filled the air. Landmine! The chill crept along my backbone.

"—He was dead! Like a rat, flung on a cement floor, he lay in blood—."

That night I heard the mountain crying. The groans and the sorrow of the old hill transmitted through my whole body, wetting my soul with grief. I opened the window, and I saw the pale moon, shimmering like a skull.

Kyeong Lee

PARADISE LOST

In the beginning it was curiosity.

"Your curiosity came from an evil heart!"

"The price of sin is death."

The room was dim without form, and void; the massive, sullen face of a drape-generated darkness.

A lighter was a mystery; it vomited a flickering flame in my uncle's hand.

"Don't touch that lighter!"

"You will wet your bed if you play with fire."

My cousin was bad; everyone said so. She had a triangular face with slitted eyes. With her husky voice she had once told me a story that made my face blush. But now the room was dark and we were alone; no one was watching us.

I believed in magic when she showed me a lighter.

"Here it is, boy."

"Of course you can do it."

The silver lighter was pleasant to the eyes, and it was desirable to satisfy my curiosity.

My fingers pulled out a long slitted scarlet tongue, and it licked the heavy drape.

Fire—Flame—Fear—Flee

My grandfather looked at me through glasses. I hid myself in the air, melting like a candle under the blazing sun.

"What did you do that for?"

"Get out!"

'Out' was cold while 'In' was warm.

'Out' was desolate while 'In' was comfortable.

In the fading sun light I felt ashamed as if I were naked. I started walking, facing the setting sun. Like the hull of my sin, the long shadow followed me.

Kyeong Lee, Grade 12
Alameda High School, Alameda, California
Teacher, Mary Frances Claggett

(Note: Kyeong Lee moved to the United States from Korea at age 15. Two years before these pieces were written he spoke no English.—*MFC)*

BAY AREA WRITING PROJECT
CURRICULUM PUBLICATIONS

1. *The California High School Proficiency Examination: Evaluating the Writing Samples* by Ruby S. Bernstein and Bernard R. Tanner
   Explains the holistic procedures used in evaluating the writing samples, including student papers representing the range of student responses.

2. *Independent Study and Writing* by Sarah Dandridge, John Harter, Rob Kessler, Miles Myers, and Susan Thomas
   Addressed to teachers, parents, and students, this booklet describes various independent study programs in grades kindergarten through twelve, and focuses on writing as a way for students to integrate their learning in such a program.

3. *Formative Writing: Writing to Assist Learning in All Subject Areas* by Virginia Draper
   Shows how teachers in all areas can use writing to enhance student learning of subject matter.

4. *Come On Out—The War's Over or Making Peace with English 1-A* by Roger Mueller
   Describes the way in which the author's experience with the Bay Area Writing Project was translated into effective ideas for organizing and teaching a writing course.

5. *Working Out Ideas: Predication and Other Uses of Language* by Josephine Miles
   This collection of essays, all on the theme of "the power of students to compose their thoughts and the power of teaching to help them," spans the years of Miles's thinking, teaching, and inspiring of teachers.

6. *The Tutor and the Writing Student: A Case Study* by Jerry Herman
   Following the progress of a single student as she works one-to-one with a tutor in the writing center at Laney College, Herman shows how to help the student recognize and use the knowledge she already possesses to improve her skills.

7. *Expectation and Cohesion* by Gordon Pradl
   Pradl explicates some of the basic principles of cohesion in writing and suggests exercises which will help students discover these principles.

8. *An Experiment in Encouraging Fluency* by Miriam Ylvisaker
   With pre- and post-writing samples, Ylvisaker illustrates the results of her experiment in using a student-centered Writing Workshop class to improve the fluency of her reluctant writers.

9. *Writing for the Inexperienced Writer: Fluency Shape Correctness* by Marlene Griffith
   Through the work of three beginning writers in a college writing center, Griffith describes the evolving relationship between fluency and shape, and fluency and correctness in writing.

10. *The Involuntary Conversion of a 727 or CRASH!: Some Ways and Means to Deflate the Inflated Style with a New Look at Orwell's "Politics and the English Language"* by Flossie Lewis
    Illustrates methods for teaching students to recognize dishonest language and to write honestly themselves.

(Continued inside back cover.)

11. *Writing Class: Teacher and Students Writing Together* by Dick Friss

Friss traces the growth of a writer through a semester of his remedial "Writing Class," and shows how well-structured assignments, peer writing groups, and teacher writing can help the student writer gain skill and confidence.

13. *Sequences in Writing, Grades K-13* by Gail Siegel, Lynda Chittenden, Jean Jensen and Jan Wall

Presents four sequences for teaching writing at four different levels, all treating writing as a process with several steps, all based on the sequence of development of individual students.

14. *Balancing the Hemispheres: Brain Research and the Teaching of Writing* by Gabriele Lusser Rico and Mary Frances Claggett

The authors survey the literature on right- and left-hemisphere specialization and analyze the implications of this research for specific classroom activities in a balanced writing curriculum.

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